DRAGON USER

The independent Dragon magazine

November 1988

Contents

Editorial

MERCY. Just for one month, let us off about the deliberate mistakes, will you please? I expect you found a few in October's DU. I hope you did ... I don't want totally blind readers. Let me just say, you should have seen it the way ... you nearly got your old front page back, you know, the one that says 'Sunshine Publications'. I don't want to mention the Pstal **rik* in Dragon User ever again, but there was a wee bit of a rush. And we have a new typeset op (Linda), totally innocent of any Dragons in the past, and a new paste-up person at the same time, and Pete pleading writer's block (but we got him in the end. Send him some letters and cheer him up.) and you can have hours of fun drawing in the Dragon logo on the Crossword page yourself.**

I realise by saying this that I am calling Mr. Sod down on this issue, but we are watching ...

Further details about the Colour Computer Convention from Dragonfire on page 5 within. Don't forget to go if you can. This is the Dragon show of the Autumn. We want one next Spring.

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How to submit articles

The quality of the material we can publish in *Dragon User* each month will, to a very great extent depend on the quality of the discoveries that you can make with your Dragon. The Dragon computer was launched on to the market with a powerful version of Basic, but with very poor documentation.

Articles which are submitted to *Dragon User* for publication should not be more than 3000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, whenever possible, be computer printed on plain white paper and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy. If you want to have your program returned you must include a stamped addressed envelope.

Letters

This is your chance to air your views — send your tips, compliments and complaints to Letters Page, *Dragon User*, 49 Alexandra Road, Hounslow, Middx TW3 4HP

Atari nice to Dragons

THE following is an extract from a recent Atari magazine:

"Its use of custom chips rather than standard off-the-shelf designs makes its architecture one of essential economy. Following on, in fact, from the mould set by the Dragon, would you believe. Their design, though an 8-bit, was very much a pioneer."

Isn't is a nice change to see another magazine giving the Dragon a bit of credit, instead of making fun of it?

Finally, a big thank you to all at *Dagon User* and all the software houses which continue to support the Dragon. Keep up the good work.

David Beckwith
3 Cholsey Road
Seige Cross
Thatcham
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YES INDEED, although most ex-users remember the Dragon with affection; it's only the boring old newcomers who think it was a toy machine like the ZX81.

Now, it would be useful to me to know whom writ that little bit, and in which magazine it appeared and, if possible, when. Information is power. Can you oblige?

Dump help!

WHEN I modified the screen dump program from the November 1987 issue (for the Brother 1009 printer) for disc use (under SuperDOS E6), I could not make it work properly; the tall sideways dump printed out a large dark band as well as the diagram. I was able with a bit of experimenting to get the standard printout to work, but not the sideways one. Can anyone help? My printer is the Taxan 810S.

D A Craig
2 Milebush Close
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BT38 7RX

Every month we will be shelling out a game or two, courtesy of our supplies, to the reader/s who send the most interesting or entertaining letters. So send us your hints and your opinions, send us your hi-scores and suggestions. Send us your best Dragon stories. What d'you think we are, mind readers?!

EXTRA PUFF

I put a spell on you

READING Jonathan Cartwright's piece on Data Trees in the July issues, I was impressed by the simplicity of his spelling checker. However, on more mature consideration, I wonder if it would work! The algorithm detects whether each pair of letters in a given word is 'legal' within the framework of accepted English spelling practice, and to a serendipitous peck proponent like myself, or the putative author of *The Silent Miaou* it would seem ideal. On a keyboard, my delicate fingers (I am six foot five) often spread over two keys. Yet I sense a pitfall in the system that he is employing:

Legal words: batter, better, bitter, butter.. **Possible words:** botter (bo, ot, tt are legal in those positions, but this is not an English word)'. Similarly, bath and both and possibly beth are English, but bith and buth are not, but they are still legal.

The permissible combinations of pairs of letters in English should lend themselves to the type of manipulation described in the article, but the unfortunate fact is that not all permissible combinations and groups are actually in use. The language that we do use is, probably, 50% redundant (*Doubtless that's why I have to cut my features by 50%. That's a comfort. Ed.*) (see Pete Gerrard's piece on gravel in his *Write: ADVENTURE* column in the same issue) without invoking those 'words' that we do use.

The awesome fact of redundancy in the language is frequently brought home to me by the difficulty that Patricia, who works hard as the co-ordinator of the charity of which I am chairman (since she kindly offers to type correspondence for me) has in matching my vocabulary with her commercial shorthand. The trouble with all current shorthand systems is that allophones (*Could that be homophones? Ed.*) are represented by similar symbols even if their meanings are different. Hence my occasional attempts to do this kind of thing unaided.

The proof reading on DU seems to have been undertaken by just such a routine. I refer to the somewhat garbled printer dump on page 3 of the July issue. The listing as printed was confusing to say the least. The omission of some characters and the apparent substitution of others mde it difficult to read. Could it be reprinted at some time?

Would you like something on the use of Dragon Basic as a structured language? The majority of listings I have seen in DU seem to violate every principle dinned into me when I had to learn how to cope with computers. promise you that I would try to express anything that I wrote in a simple version of the language.

Eddie Wren, 20 Clarence Place,
Gravesend Kent DA12 1LD

Let's start at the botter and work up: I think that would be interesting. About 1000 words at a time is the most acceptable, with examples and any necessary listings.

This is a good place to grab my green eyeshade and recycle some tips for all the prospective scribes I have summoned this month:

The first rule of sound technical writing, as taught be every authority, is 'keep it simple, concise and direct'. Tech journalism (as opposed to report writing) differs only in that the active tense is preferable to the passive tense. ("The computer was plugged in and booted" — by whom, may I ask? Say "I plugged in the computer, and booted it."). Avoid convulvulacircumloculatification and other words over three syllables. Above all, do not try too hard to force a 'writing style'. Editors can always cross out anything they don't like. That is what they are there for.

They are also there to retype programming tips for the letters page, as such tips rarely arrive in a camerable state. They check them. They get them typeset. The typesetting machine mangles some of the characters (yes, it's all done by computers). If they are lucky, they get to check them again. If not, they don't. I can't re-check that listing unless Harvey of Three Trees writes to me and tells me what's wrong, as I have lost the original. Which is doubtless why there are errors in it. You don't read the Evening Standard, **then?**

No amount of editing experience prepares one for the horrors lurking in computer listings, and I include listings taken straight from the computer.

The first person to come up with a suitable definition for 'botter' will get one of those tapes from the MBB.

Ribbon you can't refuse

ANYONE who is having touble in finding a ribbon for their GP-100A, give me a ring on 0473-718898, Mondays and Wednesdays only, 5 o'clock onwards please.

Chris Sheppard
119 Shetland Close
Ipswich
Suffolk
IP4 3DZ

Too old for Experts!

COULD you please tell me if the promised secret code for *Rolaball* will be published soon, as I am getting nowhere fast with the game!

I am glad to see that the change in ownership of *Dragon User* doesn't seem to have altered the magazine in any way. Please keep up the good work of keepling the Dragon 'alive'.

I was sorry to read that Pam D'Arcy has followed the same path as many other Dragon people and turned to other work. It was particularly disappointing after Pam produced *Formula One* which had to be one of the best games for the Dragon in a very long time.

I would have volunteered myself for the Arcade Arena spot, but I am too busy in work at present and also, I think, I'm a little too old!

I am 22 years old and work as a computer operator. I own a Dragon 64 (an upgraded 32, really), plus twin disc drives. I use the Amstrad DMP2000 printer. I use the Dragon mainly for games playing. I have a large collection of software built up over 5 years. My interest at present is trying to get as much of my tape-based software to run on disc as possible. Orange Softrware have been a great help lately, but putting my Quickbeam games including *Dupliildisk 2* onto disc for me for a small fee.

I have a problem with *Chuckie Egg +* from Paul Burgin it transfers to disc properly, but doesn't run. Can any of the readers help me?

Once again, keep up the good work and contact me if I can be of any help with my back issues of *Dragon User*. Sorry this letter is so long. It was only going to be a quick note!

Geoff Thomas
35 Weig Fach Lane
Fforestfach
Swansea SA5 5AY

WELL, there you are, another one who's too busy with his work! Pam always knew that the demands of earning a crust would pull her away from the Dragon again, but it is ironic to think that it was her work on *Formula One* which became the 'CV' that got her a new commission in another field.

Talking of this, the Probyn Brothers, who do our crossword, recently wrote to tell me that, thanks to their Dragon samples, they gained a commission to compile a book of crosswords. Not on the Dragon, alas. They won't stop writing for DU, but they have something new in store just after Christmas.

Yes, I think it's about time on of our regulars let on about the *Rollaball* dodge, tho' with the new version of RB released fairly recently, we may be kept in suspense a bit longer.

Perhaps Paul himself can propose a solution to your hard-boiled Egg.

Raring to research

IN answer to your request in September's editorial, I have a complete collection of DUs and of *Dragon Stop Press* and *Dragon World* (such as they were before Dragon folded), plus a number of *Cuthbert Chronicles*. I would be happy to research aspects of the Dragon's past from this source material if your readers are interested.

Brian Thomas
51 Ashover Road
Old Tupton
Chesterfield
S42 6HH

MANY thanks to all the readers who wrote in to say that they had stocks of back issues. Brian has even grasped the nettle firmly by offering to do some reserach. Now I will have to 'get my head together' between hasty bouts of typing and think out exactly what to say to folk who are willing to do some winkling-out and looking-up; but it would be nice to look back over the Dragon's long and interesting history from the perspective of 1988 we have a lot of speculation about 'what is going on' in the postbag, so it isn't inappropriate to check out 'what has went on'.

Look carefully and you should find an article about the history of the Tandy CoCo in this issue.

On the same tack, thanks also to the other, unacknowledged people who sent material about the Dragon Professional. I think (hope) I still have that in my files somewhere, after running some of it on these pages, and we may be able to draw on that at some time in the future.

One thing our historical record really does lack is any published documentation on the history of Eurohard's efforts to relaunch the Dragon. Various people have sent news over the years, but it remains hearsay in the end. Any verified news sources from Spain would be most interesting.

Dump help again!

YOUR *Down in the Dumps* article in November 1987 came near to my requirements, but not near enough. I have a Brother HR5 printer. Can anyone tell me how to modify the M1009 program for use with the HR5? I presume all I need to alter are the EXC codes in EFDC to EFEC. Your help would be appreciated.

Keep up the good work.

R F Roach
Trenellan
Manaccan
Helston
Cornwall

Use for utilities

I have been a reader of your excellent and enjoyable magazine since the latter part of 1983, and although it is obvious that the number of programs submitted has declined, the quality of those that are is much improved.

Not being very expert in the programming field, especially machine code, I find it frustrating sometimes to have what appears to be an excellent utility to hand and not know how to incorporate it fully into another program. I have mnaged to use COL-64 in a Basic program, but such utilities as *Windows*, for example, which appeared some time ago, leave me at a loss. Are there more expert amateur programmers out there who can show how to use such utilities to their fullest advantage? I am sure someone must have done this for their own use. Any takers?

Also a cry for help: I have been given a numberof old Dragon programs, one being Microdeal's *Telewriter*, dated 1983. Unfortunately, the manual had gone missing, so apart from having worked out a few of the editing commands, I am completely in the dark as how to use this word-processor to its fullest extent. Is anyone willing to help? If so, I would be very grateful.

John R Winchurch
21 The Spinney
Brackla
Bridgend
Mid-Glamorgan

THIS is not the first request we have had for more help with utilities, so I will appeal formally for anyone who feels they really have their best utility sorted out to get in touch with DU if they would like to write it up.

I will also have a word with Brian Cadge about Windows. I know his nose is kept fairly well to the grindstone by the demands of his job, but he was grumbling recently about the lack of letters occasioned by the (yawn) postal strike so I may be able to nobble him while he is waiting for stocks to build up again.

I put the improvement in Dragon User programs down to a fierce editorial selection policy and pulling out of fingernails. No, but seriously, DUI readers must realise that they have access through DU to people who have been decidated to exploring the Dragon's possibilities for years, and have refined their knowledge of the machine. DU also gave up publishing pages of short programs many years ago, as we (I include the former editor, John Cook) felt that readers weren't getting the mileage from these that the space warranted. There are plenty of programming ideas to be gleaned from the pages of Dragon User as it is.

This of course brings us back to the subject of mastering the art of external routines, utilities... and even whole packages which turn up without the instructions. Any offers of assistance will be looked at with our customary care, and no nail pulling.
Promise.

News desk

If you have any new products for the Dragon — software or hardware — please write to The Newsdesk at 49 Alexandra Road, Hounslow, Middx TW3 4HP

Kouga gets the ball rolling again

Kouga Software is to release a new game, called *Ball Dozer*, which, according to John Foster of Kouga, "Has many of the features of the coin-op *Arkanoid*, with bonuses floating down the screen, including lasers and an extra-fast bat, among others''. The game features 30 screen "full of deviously placed bricks to knock away", and a bonus game after screen 30.

Ball Dozer was written in machine code by Stewart Orchard. Kouga are looking for further authors, and are offering around 50% royalites. Orange Software will be marketing disc versions of Kouga's games at the same price as the cassette versions, and will be representing Kouga at the Colour Computer Show in December.

"I have at last subscribed to *Dragon User* adds Foster. "I can afford it now because of the way sales of *Mandragore* have been going."

Perhaps one day Kouga will be so big that they can afford to plough a few bob back into the press in the form of advertising.

Get your ads on

. . . and while we're talking of advertising, Dragon suppliers, don't forget that the December and Christmas issues are coming up, when the Dragon world is looking for Christmas gifts and presents to spend their Christmas money on. Even the longest memories need updating and reminding about what you have on your lists, and special offers are especially tempting around this time, so let us know - soon! - if you want advertising space in one or both of these festive issues.

Copy dates

Advertisers! Please get your copy to us for setting by the end of the third week in the month PRIOR to the date of publication. Ad. copy for the December issue should be with us for setting by the third week in October. Self-originated copy (DTP'd) can be with us a week later. Any later than that and you'll have to run behind the postman and hand the ads out yourself. Save shoe leather! Send us your copy.

THE National Dragon Users Group will be releasing a desktop publishing package early next month. The program is a licensed conversion of a USA CoCo program by Falsoft, 'improved, enlarged and converted to DragonDOS', and will sell for around £12.

NDUG's Paul Grade said: "Our DTP program is as simple and as cheap as we can make it, all menu-driven, so that no instruction manuals are needed." Wew hope a review will follow shortly.

Enquiries to NDUG, 6 Navarino Road, Worthing, Sussex.

Don't forget the Colour Computer Convention in Weston-Super-Mare on 4th December.

New keyboards make contact

Siegfrieds Schraubenzieher GbR SSZ, Hardware-Erweiterungen fur Ihren Dragon have been in touch to say that holidays and office removal have prevented them from being in touch sooner, and that they are a very small company producing add-ons for the Dragon. The interface, mentioned on *Dragon User*'s August *Newsdesk*, with a hardware clock and add-on keyboard, features 94 keys including 10 function keys and a number pad.

The interface board comes with an English manual and software for DOS and OS-9. The full interface costs £49.95 including P&P, and a clock-only version costs £33.34.

A knowledge of soldering is needed to install the interfaces in the Dragon.

The company's new address is Siegfrieds Schraubenzieher GbR, Alexander Groschel, Mittlere Schulstasse, D-8520 Erlangen, Bundersrepublik Deutschland.

Life on the cheap

SIMON Hargrave of Solve-Soft, last seen heading for more commercial pastures, has been in touch to say that his series of adventure games is still available from Solve-Soft as a package at £20 the four, a saving of £5.

The titles involved are *Starcrash, The King's Quest, The Quest for the Meaning of Life*, and *The Heir of Tyos*.

For purchasers who already have one or more of the games, a concessionary price of £4 per game is available.

The games are also stocked by Orange Software, but *Dragon User*'s understanding is that, at the present time, this offer applies only to games ordered from Solve-Soft directly.

Solve-Soft, Crawley Hill Farm, Uley, Dursley, GLos. GL11 5BH.



Undaunted by the Vikings of High Wycombe, the Stratford upon Avon Vintage Car Rally, Sunday Lunch at the Bridge Club and Goldie the Cat, the Editor receives the October Issue Comp Copy from the hands of Gordon Lee. Dragons try harder!

New software for review should be sent to *Dragon User*, 49 Alexandra Road, Hounslow, Middx TW3 4HP

Custom control of cash assets

Title: *Business Finance Recording System*
Supplier: Llewellyn Robins Studios, 64 Enbourne Rd., Newbury, Berkshire RG14 6AH
Price: on application

THIS is a comprehensive book-keeping system for the small business owner. It provides all necessary records for the VAT-man as well as reporting such vital things as which accounts are overdrawn and who owes you money. It runs on the Dragon 64 under OS-9, and requires the Dragonplus board from Compusense.

It must be said at the outset that the program has similar aims to Dragon Data's own *Cash and VAT* which was released as an OS-9 package. Indeed the author of the present package, Llewellyn Robins, wrote it to remove some of the frustrations he had experienced while using *Cash and VAT* over a long period of time. His decision to make use of the Dragonplus board stems from a desire to improve the display of the all-important and extensive menus, which he had to split over several screens in the 32 column display of the original version, and to make use of the extra 64K of memory to vastly improve the speed of operation and give more room on the disc for accounts files. At the same time this does limit the number of potential users.

Llewellyn has not just modified *Cash and VAT*, however. Since the original authors have 'gone away', this new program is completely rewritten and includes extra headings and catagories suited to his own photographic business. The source files can of course be adjusted so that it can be tailored to the user's requirements, and will be supplied 'made to measure'. The program is being offered to improve the range of business software available and has been thoroughly tested in the author's own business. The cost will depend on the amount of work entailed but the main aim in putting it on the market is to allow others to take advantage of the 'blood, sweat and tears' (not to mention the sacrifices made by his 'computer widow') in the writing of it rather than to make a substantial profit.

I must confess I found it an impressive package. My review copy had minimal instructions, but despite the complexity of the program it is simple to use and the menu system is so well thought out that I was using it confidently after just a few minutes of experimenting with the disc of dummy data provided.

A small procedure first initialises the extra 64K of memory as a ramdisc and automatically copies onto this a number of special program modules. The disc is then replaced by a formatted disc and you are ready to go.

From now on, response to commands is virtually instantaneous apart from when files are saved to or retrived from the data disc. The main menu offers the chance to enter new files, to update or amend existing files or to obtain reports. The reports may be to screen or printer and may be detailed or just summaries. The VAT register may also be consulted in several ways and will produce a full printed audit trail.

Other options allow reports on bank accounts and transfers between deposit and current accounts, payment of credit card accounts etc. A special option allows program parameters to be set, so that if the VAT rate is changed this can be entered permanently into the program, as can printer page lengths, etc. *Cash and VAT* required the VAT rate to be entered each time a trans action was recorded.

Once a transaction is requested a new menu with no less than eighteen different categories of income or expenditure is offered. Apart from the sale of one's grandmother it is hard to think of a category not covered. Having chosen the appropriate one you are prompted for full information including cheque numbers, whether payment has been in part or full etc.., At each stage you can correct errors or press the X key to escape. Once your information has been entered, a quick look at the Bank account enquiry shows that all necessary adjustments to your balance have been made and that all other necessary files have been corrected. At least 1500 transactions are possible on one data disc three times as many as on the old program. Normally a new disc would be used for each quarter and necessary information on bank balances is automatically transferred onto the new one. *Cash and VAT* could not do this. The new program allows discs to be swapped to look at another quarter, and either monthly or quarterly summaries can be obtained.

I certainly could not fault the operation of the program, or its user friendliness, and had to dig deep to find any niggles. My only suggestion for improvement is in the way the date is input. Firstly the program only accepts one date format, for example 01.06.88, and if you forget that and enter 01.6.88 it treats this as a different period of time. A small subroutine to accept various types of input would not have taken much more memory. Also, since OS-9 requires the date to be set at boot-up, could this not be automatically used if, say, ENTER is pressed?

Reviewing a program such as this makes me feel sad. If the Dragon had had a proper 80 column display mode built in and been properly marketed then a program such as this would have sold like hot cakes. After all, with the Dragonplus and OS-9 it makes CP/M computers and even PCDOS seem really clumsy, which they are. If there is anyone out there who operates a small business and has the necessary hardware, then you would be foolish not to take advantage of this excellent and efficient program. Because of its restriction in demanding special hardware I must give it four Dragons, otherwise I would certainly give it five.

David Rothery.



The proof of the tarts is how hungry you are

Title: *Diamond Manor*
Supplier: Dragonfire Services, 13 Parry Jones CLose, Blaina, Gwent NP3 3NH.
Price: £3.00

FOR some peculiar reason I feel that a game called *Diamond Manor* should be a platform game. Thankfully though I don't have to do another review of a *Manic-Miner* clone as the game is in fact a text adventure, one of quite a few now in the Dragonfire range.

The scenario is that you have to steal a black diamond from a mysterious and at first seemingly impenetrable manor. Your task is aided by the fact that you are a cat burglar (that's an agile burglar, not a person who steals cats, dear reader). Despite this quality your task is still tough.

You start off on a pathway, your nasal passages tickled by the smell of tarts; that's a description new to me, and I can only remember a handful of times this sense has been made use of.

Exploring further away from your initial position you find dirt tracks, hills, wasps nests and the door to the mansion itself. The writer as anyone would rightly do has made sure the door is closed and that you can't open it a problem that you need to keep at the back of your mind while you explore.

One disappointing factor in my opinion though is that the location descriptions are terse to say the least. For instance: 'You are on a small dirt road' does not exactly inspire the imagination to create a mental picture of the surroundings.

Having made that point though I must say that I would find it difficult to say anything more enthralling about a dirt road myself. 'You are walking along a small winding dirt track road, the orange glow of the setting sun gleaming from the pools of slimy black mud' doesn't really have that picture postcard feeling, so perhaps

here the author was right to opt for simplicity. (*Try playing a chorus of 'Down the Dustpipe' Ed.*) Once you get into any task though location descriptions pass unnoticed and here you try your best to get into the safe oblivious of the dirt roads outside.

The whole thing is portrayed on screen in standard green/black text which I now find disappointing having seen this format for so many years. Vocabulary is fairly extensive with in most cases choice of verbs, for instance if you want to drink you can not only 'drink' but 'sip'. All in all there are over 60 commands which are entered in the standard way of verb-noun.

The game is not one of the hardest that I've ever played, but is not exactly easy either. There are added difficulties, like the gardener who wanders around either pinching what you're carrying or imprisoning you if you've nothing worth stealing.

One interesting point is that my copy is an early version. Dragonfire are ironing out a few 'bugs' before release all of which will have been done by the time you read this. Andrew Hill of Dragonfire describes these bugs as spelling mistakes and punctuation omissions as well as an error in one location as to your accessible directions. As for spelling and punctuation, it's nice to know that they really care about their products, especially when the faults are barely noticeable; it's careless things like the inconsistent spelling of 'metre' in Olympia that bothers me.

Dragonfire could easily leave this title as in my copy but take pleasure in selling the public the product perfect. As an adventure alas it is not perfect. It's pretty much a run of the mill type adventure, but not bad.

Philip Stott



Simplest is best

Program: *Copycat* (utiliy)
Price: £3.49 inc p&p
Supplier: Pulser Software, 36 Foxhill, High Crompton, Shaw, Oldham, OL2 7NQ

AT some time or another most disc users will have had to indulge in a little 'housekeeping', by which I mean tidying up the disc, deleting old unwanted files and copying all files relevant to a particular activity, onto a separate disc. This is probably one of the most tiresome chores in computing. Pulser Software have come up with *Copycat*. Written in Basic, this simple little program will be invaluable to disc users.

Copycat is a program that uses a single choice method to either Kill, Copy, Protect or List the protection on any or all the files on a disc. The only menu the program presents is the one that asks which of the aforementioned tasks you wish to perform. Once that choice is made then all others require yes or no answers only. Each of *he main procedures allows you to manipulate all the files or just individual files, and as the system works its way through the directory it always offers the facility to abort or treat all the remaining files. At any of these points typing 'Y' would treat only the file whose name is displayed.

The search facility is a little disappointing in that it does not repeat. Granted, it does search out a file even if the whole filename is not entered (opyc will normally find copycat). However, the system seems to think that it is infallible and automatically assumes that the first match it finds is the one that you want. In addition to this a repeating search facility would make it much easier to copy all the text files by entering .TXT when in search mode.

A small source of annoyance is the way *Copycat* deals with empty directories. If a clean disc is put in, and it is attempted to copy a file from it then an error occurs. The same thing happens at the end of the Kill routine, when the program attempts to display the directory for the disc, and finds it empty. Although this is not a serious fault, it would have been much nicer to display a message saying that the directory is empty.

The enhanced directory facility is really super. Output can be channeled to either screen or printer and not only lists the file names, but also their position on the disc and the start, finish and exec addresses to boot. The printer output is very neatly laid out, with a space between each file and the file name printed in bold type. The latter could present problems for some users, as no information is supplied as to how to reconfigure the program for a different printer. It works well on my Amstrad, which is Epson fx compatible, but if your printer uses a different code for bold type then it could cause a problem. As the program is written in Basic, a simple remedy presents itself. Pulser need only print the number of the lines containing the printer codes so that the user could simply change the codes and reconfigure the program.

All these criticisms are of a fairly minor nature and, when the price of the program is taken into account, fade into insignificance. A more serious problem is that the copy routine is geared to a two drive system and cannot make a copy of a program using a single drive. All the other facilities will work equally well on one or two drive systems. My advice to any disc user is to get yourself a copy of this program and use it to make copies of itself on all your discs. Once you have used it, you will wonder how you ever got by without it.

R N Hewson



But will it stick?

Product: *Seal'n'Type* keyboard cover.
Price: £5.95
Supplier: R&AJ Preston, Kings Hall Court, St Brides Major, Mid. Glam, CF32 0SE

THE *Seal'n'Type* is a clear flexible plastic cover ingeniously custom made for the Dragon keyboard. It consists of a flexible PVC seal which is attached directly over the keyboard with double-sided sellotape and a strip of Velcro. The object of the cover is to fully protect it at all times against spills, dust, ash and grime, while enabling typing through it apparently unimpaired.

The theory is sound and the instructions concise, although they do not mention the Velcro. Fitting theoretically is easy: all you need is a ruler, a hairdryer or blow heater and some warm fingers; all you have to do is push out the cover keys, fit them over the keys of the keyboard, attach the double sided tape by peeling off the backing, ditto for the Velcro, and Bob's your uncle or is he?

I have a plastic 'Microguide' cut-out around my keyboard plus a fold-back cover, a multi-pack interface attached, plus the usual Dragon accessories scattered about, five left thumbs on each hand notwithstanding. Fortunately with patience and bad language I managed to successfully carry out an extremely simple routine which anyone should be able to manage with ease.

Finally came the moment of triumph and I started to type through it for the first time. Clear it may be, simple it may be, but the sensation is difficult to describe: the sense of feeling isn't quite there, and somehow for me it detracts from the typing.

The problem with buying mail order is often that you cannot try first. The theory of this device is first rate, the practicality obvious, fitting for most will be very easy, and yet somehow I wonder if the investment was really worth it. However, I will persevere if only to get my money's worth.

I will in due course report on how it wears. For the time being, if I were to award dragons for this on a scale of five I would be three.

R N Hewson



Something stirred . . .

Roger Merrick digs into the history of the Tandy CoCo.

I bought what may have been the last 64K Tandy Color Computer in the country. Knocked out at £29.95, for me it was a very inexpensive solution to the high cost of upgrading a Tandy CoCo (a service no longer available from Tandy), but an ignominious end to the High Street presence of one of the greatest and most enduring 6809 based machines.

Without the CoCo, the Dragon would have been a very different beast, if it had existed at all. As the CoCo never sold very well in this country, it is likely that its passing will go otherwise unremarked. A measure of how small the user base must be is that although the machine was on the market for several years longer than the Dragon, and although Tandy had them on sale in many high streets, no group or magazine solely devoted to the CoCo has ever existed on a national scale in this country. The machine was virtually disowned by the 'Trash 80' (TRS80 Model 1, 3, 4 etc) fans.

The CoCo has had an amazingly long lifetime in computer terms, through a period of rapid change and development. It was first shown in the US in July 1980, at the same time as the (long dead) TRS80 Model III, so it has been with us for eight years.

The design has, despite idiosyncrasies, proved to be remarkably adaptable and, even today, can be recognised as foresighted. It was originally issued in a large grey case with (can you believe) 4K of Ram, 8K (non-extended) Basic Rom, and what was described as a 'deluxe' keyboard (push button). It offered 'Color', plugged into a domestic TV, and came complete with cassette, joystick and Rom pack ports. The most forward-thinking inclusion was the RS232 port as standard.

A month later, a modified version of the machine was introduced as a dedicated terminal for an American Prestel-type service called Videotex. Unlike Prestel, Videotex used a 32 by 16 format screen (sound familiar?).

Precious memory

The reason for choosing the 6847 where the screen display is a 'box' or 'window' in the TV screen is that this requires a smaller amount of memory, which was in those days precious and expensive. A small number of characters per line enabled the display to be used on a domestic TV, saving the user the cost of a monitor. This, in retrospect, can be seen as an unsuccessful direction to take. The amount of time consumed by the family computerist aggravates the typical family who might be expected to prefer watching the events of Albert Square to the disassembly of the Basic Rom. Long periods spent peering at a TV screen are bad for the eyesight. Still, that was the way it went.

Father Christmas could have brought you a 16K Extended Basic model for $599.

For approximate British prices, just call the dollars 'pounds'. By contrast, the top of the range TRS80 Model III was $2495 for a 32K ram, twin track drive, with a monochrome display. The entry machine with 4K was $699. Tandy's first dot matrix printer retailed for nearly $1500.

It was 1981 before the CoCo appeared in Britain, by which time the 400 price tag, plus the lack of immediate application in comms, and the competition from homegrown systems resulted in lacklustre sales. (It was impossible to get any information from Tandy regarding sales until mid 1986 when to the great surprise of industry commentators, Tandy began to report their claimed sales figures. For the first quarter of 1986, a time when the machine must have been past its first flush of enthusiasm, Tandy claimed 37,000 CoCo sales in the US. However, similar figures for the UK are not available).

Although the machine was on the market several yers longer than the Dragon, no group or magazine devoted solely to the CoCo has existed on a national scale in this country.

Then there was the software — mainly Rom-packs available at $25 upwards for (typically) 4K of code. By the way, a totally unexploited feature of the Rom slot is that it can store and load nearly 32K of code, despite the cartridge space being only about 16K. How? Simple, the Rom pack can contain two banks of 16K Rom; bank zero is loaded into Ram, then bank one is switched in and the program is executed. This is a design feature of the cartridge port and can be discerned from published Tandy data and applies to the Dragon. Can anyone name a Rom pack to use this?

Just a few months later and the nation was in the grip of the 'Home Micro Boom'. Enter, from nowhere, the Dragon.

The Dragon's specifications and price tag combination hit the CoCo's already precarious market position. Dragon's 32K Ram, extended Basic, real keyboard with parallel printer port and monitor as well at TV output for 199 make the CoCo's 16K pushbutton keyboard, no monitor output, no parallel printer output (but plus RS232) for 400 look sick. Along the way, CoCos with 32K and 64K options became available.

Rumours were originated in my hearing by Tandy salesmen of the Dragon's poor quality. I was told 'unofficially' of 'an aircraft hanger full of duff Dragons. They use inferior components. If you buy one of those, statistically you'll need to send it back three times before you get a machine that works. Oh, and pay by cheque, they may not stay in business long enough to cash it.' As you see, I didn't forget. I'm still waiting for my Dragon to develop a fault, by the way.

Exaggerated

The Dragon did annoy Tandy, and not least because a year earlier they had obtained an injunction to stop Lowe Electronics importing and marketing the Video Genie, an enhanced copy of the TRS80 Model I. The Dragon was just sufficiently incompatible with the CoCo to avoid this fate. But again, these incompatibilities were never fully and accurately documented, and they were over-exaggerated.

Dragon Data Ltd, of course, shot to oblivion. In early 1984, the Color Computer was relaunched in a repackaged, redesigned and repriced hi-tec white case with a real 'real' keyboard, updated Basic Rom, more software and incompatibility with 'series 1' disc controllers.

Your Computer magazine reviewed the software and hardware combination of the new CoCo 2, the 'series 2' disc drives and OS-9. They pronounced themselves favourably impressed. It is a nicely styled machine, and the looks have been carried forward to the CoCo3 and the 1000EX.

In some ways, the Dragon's ability to run Tandy CoCo software was part of its undoing Dragon Data and other companies launched out of date software written for the smaller memory CoCos, software which promised much and delivered little.

Amusingly, Tandy did not arrange to sell third party software until the Dragon was well established (indeed, Dragon Data were not trading). These programs were written for the CoCo in the States, converted by Microdeal for the Dragon, had their marketability tested on the Dragon, and were then reissued for the CoCo. At one point in the collapse of Dragon Data, it appeared that Tandy UK might actually buy and sell off existing Dragon stock. The biter bit? But it never happened.

Lost interest

A range of matching peripherals drifted onto the market, but at the very time it needed promotion, Tandy seemed to have lost interest in promoting home micros in Britain. Internationally, they had seen their position as one of the top three micro manufacturers in 1980 (with Apple and

Commodore) eroded until they were just running with the field; the published sales figures showed their MSDOS machines were the biggest sellers. Their strange marketing policy of only stocking their own products in their stores meant that third party support for the CoCo had to exist by mailorder. This policy has now been dropped; it was too late for the CoCo, but now you can buy an Amstrad.

The CoCo had been evaluated for use in schools as part of the MEP programme that brought us the (not so) very wonderful Beeb. The CoCo was rejected because it did not offer upper and lower case as standard. Tandy never made any attempt to deal with this problem by either software or hardware, until the introduction of the 6847 T1, a version of the VDG with selectable lower case character set. This chip must have appeared from late 1985 onwards, but production was discontinued almost as soon as it was introduced. In this country, promotion of the CoCo had stopped and although machines were on sale with the lower case chip, the feature was not documented. The system defaults to the 'normal' state of reverse field for lower case when anything is printed to the screen. If you have a CoCo 2 and wish to test whether it has the lower case chip, try this:

```
10 FOR X = 1 TO 255 : POKE 1024 + X, X
: NEXT
20 POKE &HFF22, PEEK(&HFF22) OR 80
30 GOTO 30
```

This little routine displays the character set, sets the 6847 to display lower case and a white border, and holds the screen display by looping at 30. Tandy users without Extended Color Basic must use 65314 instead of &HFF22. (If you want to upgrade to Extended Basic, contact me).

In CoCo OS-9 V1.1 or later, try the following, which can be built into the startup routine:

```
TMODE TYPE=1
DISPLAY E
DEBUT .FF22
=50
Q
TMODE .1 -UPC
(Control 0)
```

This tells the system that a lower case ability is in the terminal, primes the system, sets the bits (primes the hardware), tells the terminal and finally switches on lower case with a coloured border. OS9 users have the advantage over others that the lower case display will remain in use until it is turned off.

For Dragon users wondering about the possibilities of this chip there is only bad news. I have not tested this, but I believe the chip cannot be simply substituted for the old 6847 on the Dragon's PCB (if I'm wrong, please correct me). And it is out of production.

The point has been made elsewhere that the CoCo system shows signs of having 'just growed' a 64K system has the Basic starting plonk half way up the memory map; direct page is from address 0 upwards; insert a disc system and you have direct page, text screen, disc system variables, graphics, user Ram and then the Basic. Topped off, in CoCo's 64K format, by 16 or 8K of unaddressable Ram, followed by more system. Why, we ask, didn't it get designed from address 0 upwards system, Basic, disc, cartridge, graphics, user Ram? I suppose because the opportunities the system offered were exploited and developed over time.

What of the future? You probably already know of the CoCo 3 only available in the US at present, though some time ago Tandy sales persons were dropping hints that 'soon', maybe next year, 'a new machine, that's compatible with the present CoCo, may be introduced.' Well it's a year later.

But I hope the CoCo 3 happens here. The new machine uses custom chips to offer total display and software compatibility with the present CoCo, but PLUS selectable 40 or 80 column display. A custom memory manager chip allows 512K Ram. The machine powers up in good old Microsoft Extended Color Basic, but Microware Super Extended Basic is onboard, to be switched in when required, and with a disc connected, OS-9 level 2 can be booted.

If this machine does appear over here, the only question we'll be asking is: can we upgrade our existing machines?

DRAGONSWORD!

Paul Grade takes a monthly stab at setting the world to rights

HAVE you ever managed to discover why you bought a computer? Did you want to Join The Age of New Technology? Or believe a computer would Help You With Your Business? Or were you one of those who watched all the sci-fi films and thought a computer could tell you the Answers to All Your Questions?

If it was any of those reasons, you must have a lot of bruises by now from kicking yourself for wasting all that money. The same applies, of course, if you were merely trying to keep up with current fashions, because by the time you'd carted your Wonder Machine home and plugged it in it had been made obsolete by the Even Newer Mega Machine With Added RAM for Whiter Whiteness.

You just can't win, can you? Because having lumbered yourself with that horribly expensive lump of plastic, you then found that it needed a printer, and of course you had to buy the best, so you spent a medium sized fortune on a daisywheel one, only to discover in the next batch of reviews that it couldn't handle the graphics you simply HAD to have, so you rushed out again, stopping only to arrange an overdraft, and bought an NLQ dot matrix, which was fine really, except that all the experts suddently started proclaiming that only a brainless peasant would use anything less than a 24-pin printer, so what could you do but phone Amex to increase your credit limit and head out again to buy one of these Ultimate Peripherals.

Still, broke and exhausted though you were, you had the satisfaction of knowing even the Joneses couldn't keep you with YOU, except that no one could possibly use a cassette recorder with a computer, it had to be a fast tape drive, so once more unto the shops ... but then of course the bus got stick in the traffic, and by the time you eventually got home the manufacturer of your fast tape drive had gone out of business, and anyway, no one could possibly use anything so crude and slow, so pausing only to pawn the canary and hang For Sale notices around the kids' necks, it was back to the shops again, wasn't it? It was nice of them to put all that red carpet down for you, but even nicer of them to sell you that 40 track single sided drive for a mere couple of hundred pounds, it's just that everyone else had decided that double sided drives were the in thing, so you had to plod all the way back to change it, and then it didn't help because meanwhile 40/80 track switchables had become the only possible kind of drive to use. It didn't make a lot of difference really, because the friendly Building Society had already repossessed the house, the kids only fetched a tenner each, the bank had taken the cat, and you'd lost the pawn ticket for the canary, but YOU HAD THE ULTIMATE SYSTEM, except that the computer boom was over and you couldn't even *give* the damned thing away, so the only thing left was to try to use it.

This doesn't apply to you, of course, because you bought your computer to Help You With Your Business, didn't you? And it did, right up until the time that nice man from the Receiver's Office came and took it away along with the rest of the firm. It really was a good investment, it reduced paperwork by 50%, although it's strange how your stationery bill went up by 800% in the first month after you bought it, and of course by judicious use of spreadsheets you were able to forecast that by next year you would be well into making your third billion ... must have been the unexpected market fluctuations or something like that, otherwise you wouldn't be a registered bankrupt now, would you? Naturally, it saved you a fortune in accountant's fees, and it was most unreasonable of the Court to insist that not paying VAT was your fault, after all, there was nothing about VAT in the software manual, was there? Still, never mind, think what a mess your business would have been in without the help of a computerised system ...

Sorry, I almost forgot you, sitting there in the corner watching the old Star Trek video. It really was unfair of the manufactuters not to mention that computers need software, and that unlike the ones seen on the box, you have to load a program, and then call up a file, before you can ask your machine a simple little question like "If the answer is 42, what is the Question?", and then it comes up with some peculiar code message in the corner of the screen and flatly refuses to communicate with you at all. Spock never had problems like that.

Has it ever crossed your tiny 8K mind that you have been conned? Ever thought that computers might NOT be the newest wonder of the world? and that the computer industry might have the same life expectancy as a flying instructor with a kamikaze squadron? Yes, I am fully aware that this is heresy, and that I will probably be burned at the stake as soon as MI5 and the CIA have finished with me, but who wants to live forever? The one thing that really worries me is that people have become so gullible now that generally they don't even want to know when they've been conned. Remember the old tale about the King's New Clothes? What happened to the brat who blew that con job? There's no mention of him living happily ever after, is there?

I know this can't apply to you. You're hard-headed, logical, calculating and unconnable. But why are all those people who keep rushing out and insisting on buying the lastest computer hardware? A computer is only a box of switches, there is no magic involved and it has about as much intelligence as a politician.

I admit that a computer has some uses, although they are usually the things that nobody uses it for, but it's primary use has always been the extraction of money from punters. I bought one originally because much of my work is connected with the repair of machinery, and as 'computerised control' was creeping into just about every kind of machinery, I reckoned I ought to learn something about the things. One thing I learned quickly is that most machinery works better without it.

Computers could have been a great help to a lot of people, and made life much simpler in business and engineering, etc., and they could have given a lot of people a very cheap and instructive hobby, but the entire industry and its hangers-on decided that it was too good a chance to miss, the chance-in-a-million to fool all of the people all of the time, so we got hardware firms bringing out new machines every month (fully non-compatible, of course), with new added Ram, the wonder ingredient that makes the price bigger than big, and there were thousands of mega-games at only ten times their real value, and finally, the business systems, guaranteed to solve all your problems, at prices which made even a healthy credit card start to melt.

None of this fooled you, did it? You knew this wonder technology was worth every pound, you had to have the best, and that meant keeping up to date.

Did it ever occur to you that you could write the software yourself, that you didn't need to change your machine just because it was no longer being pushed by the manufacturer, that not only could you have written programs for your own use, but you could have made a little cash by marketing them as well? And that even a smaller computer than the Dragon can handle files and programs limited in size only by the capacity of its discs?

If the punters weren't so gullible, the manufacturers would have been forced to adopt a more realistic policy, machine compatibility would have been a necessity in order to sell the things, and prices would have dropped accordingly. More to the point, the 'home computer boom' would never have happened, and there would instead have been a lower-key but much more permanent market, and more progress, because manufacturers would have been forced to improve the product instead of merely changing it and adding a new case.

The decline and fall of the Home Computer Empire is the direct result of the greed of manufacturers and the gullibility of the public. It could have been something really good, really useful, instead of just another rip-off, but don't blame the computer firms ... if you hadn't been so eager to have it easy, they couldn't have conned you.

If that's all just history, then how come Atari, Amstrad, Commodore etc. are still selling mediocre products to willing mugs? They aren't all first time buyers; a lot of them have come from the Dragon and Tandy scene, which would seem to indicate that people never learn at all. Think about it.

Crossword

Please get your answers in to *Dragon User Crossword Department* by the end of the month on the front cover

The twelfth Dragon Crossword surveyed the new recruits. 'Well, you 'orrible lot, you thought you'd join the Tenth Dragon User Crossword, did you? This the best they can do, then, 'alf a dozen? Normally, we have 'undreds, 'undreds! Wot are they playing at??'

"Excuse me, Sir" squeaked a small blue envelope. "We only escaped yesterday after two weeks at the bottom of a dark, damp postbox. Lots of our friends are still trapped, along with several Dragon User contributors. That roaring noise you can hear is The Editor trying to kick the postbox down."

The phrase is CLOAD AND CSAVE.

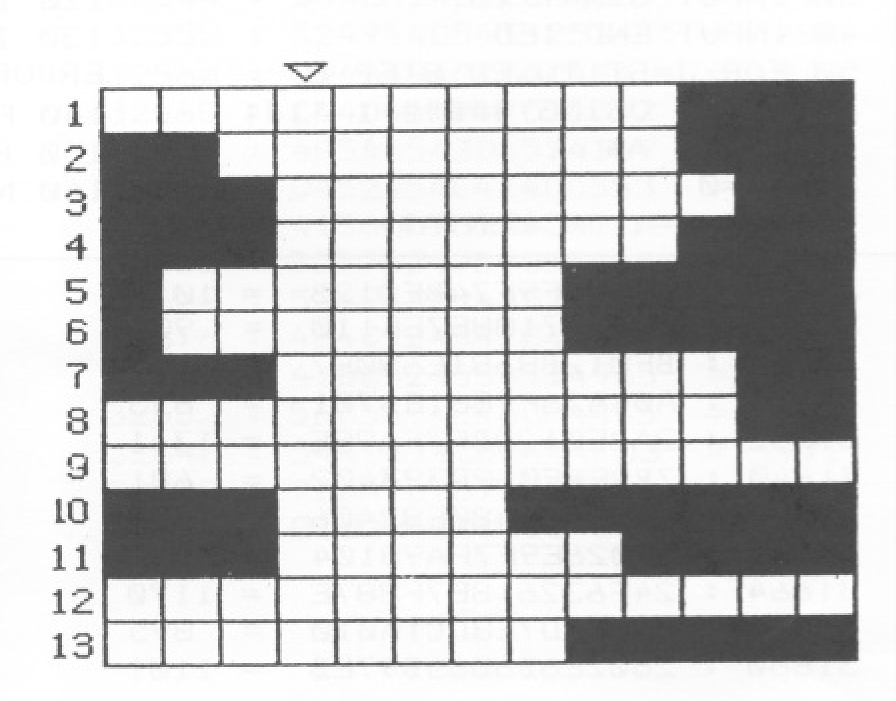
There will be a couple of free tapes from the Editor's Magic Bottomless Box for the first correct entries out of the hat each month. You can try telling us which tapes you'd like — you never know, we may have them.

And you don't have to cut up your *Dragon User* — entries on a photostat or a plain piece of paper will do, as long as we can read them.



All the answers are names of Dragon software. When completed, the column marked with a triangle will spell out a phrase.

1. Lights needed in this mine? (3,4,3)
2. Surely the speaking clock's favourite game! (3,7,5)
3. Confuse a question about marine venture (3,5)
4. see 2
5. Frogman not so fast without one on (7)
6. Accuses with digits! (7)
7. Is hell best turned into chimes? (3,5)
8. Invasion by young moth! (11,6)
9. Someone to watch over you about to argue land gain (8,5)
10. Fur you get angry about (4)
11. see 8
12. Do not pass go! have exclusive rights to the heavens. (5,8)
13. Pure disk spun round for young Clark Kent. (5,3)



Four More Commands

P D Smith *resurrects, interrogates, pinpoints and normalises his disc files.*

THIS program adds four extra commands to Dragon/SuperDOS: RETRIEVE, INFO, DETAILS and DOS.

RETRIEVE allows you to recover a file that you have killed, as long as the disc space used by this file has not since been written to. Unlike most other retrieve routines I have seen, this command flags all the sectors used in a file as being used, most other routines just reset the flag in the directory entry. The problem with this is that if you save another file after retrieving one, the saved file may overwrite the retrieved one, since the DOS does not know which sectors are used by the retrieved file.

To use this command type RETRIEVE 'filename' where the file name is in the standard DOS format as in for example KILL, after entering a RETRIEVE command several things could occur:

i) You could get an error, FE means that an 'unkilled' filed with the file name exists, NE means that no killed file with the name can be found, LD means that some sectors used by the requested file have since been used by another file, and the file cannot be recovered.

ii) OK appears, the command has been carried out successfully.

iii) The message 'LENGTH xxxxx (Y/N)?' appears, this means that the file could have more than one directory entry (it is impossible to be sure after a file has been killed) and so you are requested to say whether the displayed length was the original length of the file, enter Y or N, the displayed length is modulus 65536 (ie a length of 6553l7 is displayed as 1) so you may need a calculator if the file was very long.

INFO displays information about the requested file, the syntax is as for RETRIEVE, ie INFO 'filename'. The file type is then displayed, DAT,BAS or BIN for data, Basic or binary respectively, then if the file is a binary one, the start address, length and execution address are displayed, as below:

BIN ST 12345 LN 3223 EX 13333

Here the length is 3223 bytes, the start address is 12345 and the execution address is 13333.

DETAILS displays how the file is stored on disc, listing ALL the sectors the file uses. Usually programs to do this only print the sectors which are recorded in the first directory entry, while long programs or programs on full discs may occupy two or even more directory entries. The output of this command will be similar to that below:

7 19 TO 8 4
34 19 TO 34 36
15 3 TO 15 14.

This means that the file occupies sectors from track 7 sector 19 to track 8 sector 4 and so on. This is on a double sided drive, the routine will adjust itself for either single or double sided drives, having respectively 18 and 36 sectors per track. The syntax for DETAILS is again DETAILS 'filename'.

DOS simply removes these extra commands so that you can load in a machine code program which will overwrite the routines, since otherwise this will cause all the standard DOS commands to stop working. To recover the extra commands if the routines have not been overwritten enter EXEC 31600.

Note 1: Retrieve does not backup the directory to track 16, so if you find that the file has been retrieved wrongly by you getting the file length wrong, just copy the backup directory to track 20 using SREAD and SWRITE.

Note 2: The default file type for all the above commands is BAS.

To use these extra commands, enter the hex loader and use this to enter the machine code. The machine code occupies addresses 31600 to 32700. To save the code on disc enter SAVE "DISKCOM", 31600,32700,31600, and to use it just type EXEC 31600. If you are loading the program from disc remember to enter CLEAR 200,31599 first.

Just a word of warning, before trying out the program remember to make a backup of the trial disc first since any error in the code could cause you to lose all your programs on the disc.

Because of this risk the hex loader has a more sophisticated checksum than is normally used, which detects transposition of bytes which the normal loader doesn't, so using a normal loader to enter the code will always give you a checksum error.

If you don't want to enter the code yourself I will be pleased to send you a copy of the program on disc (40 Trk SS) for 3.00, this will also include any further commands I have since added. My name and address are: P.D. Smith, University Hall, Birchwood Road, Penylan, Cardiff, CF2 5YB.

```
10 REM HEX LOADER
20 CLEAR 200,31599
30 INPUT"START";ST
40 INPUT"END";ED
50 FOR J=ST TO ED STEP 8
60 PRINT USING"##### : ";J;
70 INPUT A$
80 CS=0
90 FOR K=1 TO LEN(A$)
100 CS=CS+K*VAL("&H"+MID$(A$,K,1))
110 NEXT K
120 INPUT" = ";C
130 IF C<>CS THEN PRINT"CHECKSUM
ERROR-TRY AGAIN":SOUND 1,1:GOTO 60
140 FOR K=0 TO 7
150 POKE J+K,VAL("&H"+MID$(K*2+1,2)
160 NEXT K,J
```

```
31600 : 8E7B6F9F74BE012B = 1016
31608 : BF7FA7108E7EF110 =  902
31616 : BF012B8681E680E7 =  959
31624 : A04A26F9861EB701 =  853
31632 : 2ABE012DBF7FA98E = 1341
31640 : 7B9EBF012D393402 =  681
31648 : 81FF270480E82406 =  699
31656 : 35026E9F7FA98104 =  931
31664 : 24F632618E7F887E = 1170
31672 : 84EDBD7E8DC1A010 =  895
31680 : 2602E6B6065B97EB = 1101
31688 : 5FF77F9BAD9FC020 = 1069
31696 : 102602DAA6808508 =  754
31704 : 261F85802711C60B =  730
31712 : 108E0650A680A1A0 =  684
31720 : 26055A26F7200F7C =  915
31728 : 7F9BF67F9BC1A025 =  963
31736 : D3C6A07E7EAEB606 = 1094
31744 : 5BC6063D8E0616AE = 1003
31752 : 85BF7FA37F7F99F6 = 1364
31760 : 7F9BF77F9C7F7FA5 = 1383
31768 : BD7C2D1026028F73 =  770
```

```
31776 : 7FA5F67F9CBD7C2D = 1342
31784 : 10260282397F7F9A = 1085
31792 : 7F7F98F77F9BAD9F = 1503
31800 : C0201026013EBF7F = 994
31808 : 9DA6808580102701 = 448
31816 : 317D7F9A2609C604 = 836
31824 : F77F9F300B2002C6 = 702
31832 : 07F77F9F341010BE = 875
31840 : 7FA3AD9FC0221026 = 683
31848 : 0112AE05BF7FA035 = 948
31856 : 10EE81A680102700 = 470
31864 : 48B77FA2BB7F98B7 = 1264
31872 : 7F981F30C407108E = 801
31880 : 7F90A6A5B77FA61F = 1155
31888 : 3044564456445610 = 513
31896 : BE7FA0A6A57D7FA5 = 1192
31904 : 270A3402B67FA643 = 849
31912 : A4E02007B57FA610 = 761
31920 : 2700C7A7A533417A = 784
31928 : 7FA226C67A7F9F26 = 1126
31936 : B07D7FA5270FBE7F = 1271
31944 : A010BE7FA3AD9FC0 = 1214
31952 : 28102600A77D7FA5 = 991
31960 : 26587D7F9F102600 = 695
31968 : 97BE7F9DE68818C1 = 1095
31976 : A01024008BAD9FC0 = 1002
31984 : 2010260087A68485 = 735
31992 : 081026007B8E7EC5 = 1041
32000 : BD90E5BE7F9DB67F = 1393
32008 : 984AE68818BD957A = 1121
32016 : 8E7ECDBD90E5BD85 = 1252
32024 : 2B81591027005981 = 553
32032 : 4E26F37C7F99B77F = 1306
32040 : 9ABE7F9DE688187E = 1234
32048 : 7C3386207D7F9A27 = 991
32056 : 014C7D7F99260284 = 821
32064 : DFB77FA6F67F9BAD = 1428
32072 : 9FC0201026002DB6 = 639
32080 : 7FA6A784E68818F7 = 1103
32088 : 7F9BBE067FAE0510 = 871
32096 : BE066FAD9FC02810 = 873
32104 : 2600117C7F9AF67F = 1226
32112 : 9B7A7F99102AFEBB = 1235
32120 : 5F39C6A639BD7E8D = 1303
32128 : 1026012AB77F9810 = 801
32136 : 8E0008C6008E7F9A = 1068
32144 : CE0000AD9FC01410 = 661
32152 : 260113B67F9A8155 = 871
32160 : 27034F2003B67F9B = 987
32168 : B77FA2C6053D8E7E = 1168
32176 : DB3085BD90E5B67F = 1162
32184 : A2810226298E7F9C = 1108
32192 : 108E7EEBA6A0BDB5 = 1216
32200 : 4AA6A0BDB54A8620 = 840
32208 : BDB54AEC813430BD = 939
32216 : 957A8620BDB54A35 = 897
32224 : 307A7FA22ADE39BD = 1242
32232 : 7E8D102600C0B77F = 896
32240 : 98F6065B8E06A6E6 = 1057
32248 : 85F77F99C61F3DC3 = 1159
32256 : 06DA1F01E684AD9F = 1203
32264 : C020102600A0BF7F = 893
32272 : 9DA6804424048607 = 595
32280 : 200486043008B77F = 871
32288 : 9FEC81FD7F9AA684 = 1214
32296 : 27318D3034108E7E = 875
32304 : D6BD90E53510FC7F = 1089
32312 : 9A830001EB808900 = 627
32320 : FD7F9A8D17BD90A1 = 1026
32328 : 7A7F9F26D4BE7F9D = 1395
32336 : A684852027 05E688 = 808
32344 : 1820AB3934108D14 = 675
32352 : 34024FBD957A8620 = 856
32360 : BDB54A35045C4FBD = 1105
32368 : 957A359086083402 = 543
32376 : FC7F9A5849B17F99 = 1163
32384 : 2504B07F995C6AE4 = 1114
32392 : 26F1326139BD8887 = 982
32400 : BD88779E52E684AE = 1170
32408 : 02108E7EC3AD9FC0 = 1203
32416 : 08102600096E9FC0 = 896
32424 : 0A5D2602C69E7E83 = 1039
32432 : 44861AB7012ABE7F = 1094
32440 : A7BF012BBE7FA9BF = 1382
32448 : 012D394241534C45 = 670
32456 : 4E47544820002028 = 415
32464 : 592F4E293F0D0020 = 642
32472 : 544F200044415420 = 378
32480 : 0042415320004249 = 407
32488 : 4E200053544C4E45 = 758
32496 : 58415554CF424143 = 659
32504 : 4B55D424545D042 = 621
32512 : 4F4FD443484149CE = 1001
32520 : 434F50D943524541 = 613
32528 : 54C54449D2445249 = 739
32536 : 56C544534B494E49 = 926
32544 : D446524541C44657 = 711
32552 : 524954C54552524F = 788
32560 : D24B494CCC4C4F41 = 1025
32568 : C44D455247C55052 = 655
32576 : 4F544543D4574149 = 733
32584 : D452454E414DC553 = 829
32592 : 4156C553524541C4 = 673
32600 : 5357524954C55645 = 757
32608 : 524946D946524FCD = 1101
32616 : 464C524541C45357 = 701
32624 : 41D0524554524945 = 632
32632 : 56C5494E46CF4445 = 943
32640 : 5441494CD3444FD3 = 971
32648 : 7BBA7D7D7DE77EB1 = 1267
32656 : 0102040810204080 = 301
```

Primesearch revisited

Paul Weedon investigates a subject of Prime concern

DEAR Helen, I didn't think I'd be sending you another program so soon, but here we go. The program is a utility type program which determines whether any number within a certain range is prime or not, virtually instantaneously.

Regulars of Gordon Lee's competition will be aware of his 'Primesearch' puzzle. This involves some fairly lengthy computing but most time is spent, needlessly, in determining whether a number is prime the same numbers could be tested thousands of times. Surely there must be an easier and quicker way.

And so there is with these two listings. Users without disc drives will be able to easily modify them to test a range of numbers, say, 1 to about 10,000. Single disc drive owners will be able to test a range of numbers, say, 1 to slightly over 500,000 while twin disc drive owners will be able to test a range of numbers, say, 1 to in excess of 1,000,000. In all cases, these ranges may be altered or even mixed but the higher the number, then obviously the longer **listing one** will take to run. **Listing one**, as it stands, does take several hours to run. Disc drive owners particularly will never regret this small price to pay as they will reap the benefit of it for a very long time.

In **listing one,** lines 60-140 allows for the data statements to be read, placed into R$ array and also to FWRITE them onto disc. Lines 150-320 use those numbers in R$ to build up a prime number catalogue. By their very essence, prime numbers apart from 2 cannot be even, apart from 3 cannot be divisible by 3 and apart from 5 cannot end in 0 or 5. The numbers in the data statements therefore stand the best possible chance of being prime. Line 200 calculates the next value (H) to be tested for primeness in the subroutine (lines 290-320) and adds to A1$ a 1 if prime or 0 if composite. When A1$ is 80 characters long then it is FWRITTEN to disc (line 260). Line 40 with line 330 are used in case of errors. Line 50 is the fast speed poke which should not be used if your machine can't handle it but if it can then line 220 will be found most useful for interrupting it to 'see' how 'things' are progressing.

Listing one

```
10 DATA 1,7,11,13,17,19,23,29,31,37,41,43,47,
49,53,59,61,67,71,73,77,79,83,89,91,97
20 DATA 101,103,107,109,113,119,121,127,
131,133,137,139,143,149,151,157,161,163,
167,169,173,179,181,187,191,193,197,199
30 DATA 203,209,211,217,221,223,227,229,
233,239,241,247,251,253,257,259,263,269,
271,277,281,283,287,289,293,299
40 ERROR GOTO 330
50 POKE&HFFD9,0
60 DIM R$(80)
70 Q$="DATA80"
80 CREATE Q$,240
90 FOR I=1 TO 80
100 READ Z$
110 R$(I)=Z$
120 Z$=STRING$(3-LEN(Z$),"0")+Z$
130 FWRITE Q$,FROM (I-1)*3,FOR 3,Z$
140 NEXT 1
150 NM$="PRIMES"
160 CREATE NM$,334*80
170 FOR L=0 TO 333
180 A1$" "
190 FOR K=1 TO 80
200 H=L*300+VAL(R$(K))
210 PRINTH
220 I$=INKEY$:IF I$="S" THEN POKE&HF
FD8,0 ELSE IF I$="F" THEN POKE&HFFD9,0
230 GOSUB 290
240 NEXT K
250 PRINTA1$
260 FWRITE NM$,FROM L*80,FOR 80;A1$
270 NEXT L
280 POKE&HFFD8,0:STOP
290 FOR F=3 TO SQR(H)+.5 STEP 2
300 IF H/F=INT(H/F) THEN A1$=A1$+"0":
RETURN
310 NEXT F
320 A1$=A1$+"1":RETURN
330 POKE&HFFD8,0:PRINTERR;ERL:STOP
```

Wear and tear

Listing two is a retrieval system which determines whether the number imputted is prime or not. This may be used as it stands or used in conjunction with your own program. Lines 520-560 FLREAD what is stored in the first 34 addresses of NM$ on disc and place them on board computer in A1$ array. This is done to save wear and tear on the disc drive, give an instant response and utilise memory which would otherwise be unused. Line 500 clears string space for this purpose and also for storing information FLREAD in from DATA80 file (lines 570-600).

You are then asked to enter your number in line 620. Line 660, assuming you have passed several elementary checks in the preceding lines, calculates the location of the address (divide by 300) and also the remainder. This remainder is searched for in R$ array (lines 670-690) and its position noted. The relative address is looked up (line 700 or 710) and called A1$. Line 720 looks up the required position in A1$ and calls this P$ (either a 0 or 1). On this (line 730) control either goes to line 750 or 760, where you are told whether your number is prime or not.

These two programs came about as a direct result of Gordon Lee's 'Primesearch' puzzle. Owners of twin disc drives will have no problem in 'fitting in' all possible numbers up to 999,999. Unfortunately I only have a single drive and had to make do with all numbers up to 999,999 except six-digit numbers starting with an even number. (Competitors will probably know what I am talking about.) Whether you are going to use this as it is or in your own pro

gram, be it 'Primesearch' or whatever, I hope you get some usefulness out of it and maybe a little fun too.

If you experience difficulty in adapting the ranges, etc. and would like some help then send an sae to Summerleys, Asderley, Wotton-Under-Edge, Glos. GL12 7QT. Please state requirement and the particular system you have.

Listing two

```
500 CLEAR 3400
510 DIM R$(80),A1$(33)
520 NM$="PRIMES"
530 FOR I=1 TO 34
540 FLREAD NM$,FROM (I-1)*80,FOR 81;Y$
550 A1$(I-1)=Y$
560 NEXT I
570 FOR I=1 TO 80
580 FLREAD "DATA80/DAT",FROM (I-1)*3,
FOR 4;X$
600 NEXT I
610 CLS
620 INPUT"ENTER NUMBER";N
630 IF N>100199 THEN GOTO 620
640 IF N=2 OR N=3 OR N=5 THEN GOSUB
760:GOTO 620
650 IF N/2=INT(N/2) OR N/3=INT(N/3)
OR N/5=INT(N/5) THEN GOSUB 750:GOTO 620
660 RR=INT(N/300):RS=N-(RR*330)
670 FOR I=1 TO 80
680 IF VAL(R$(I))=RS THEN GOTO 700
690 NEXT I
700 IF N<10200 THEN A1$=A1$(RR):GOTO 720
710 FLREAD NM$,FROM RR*80,FOR *1,A1$
720 P$=MID$(A1$,I,1)
730 ON VAL(P$)+1 GOSUB 750,760
740 PRINT"THIS NUMBER IS NOT PRIME":RETURN
750 PRINT"THIS NUMBER IS PRIME":RETURN
```

Dragonsoft

New software for review should be sent to *Dragon User*, 49 Alexandra Road, Hounslow, Middx TW3 4HP

Draw what you like, but draw your own conclusions

Program: *Picture Maker*
Supplier: John Penn
Price: £5.00

THERE has been a surge in the number of high quality utilities recently. However there have been surprisingly few CAD programs, and what there has been has often disappeared into obscurity. David Makin's *Picture Maker*, marketed by John Penn Discount Software, is one such program.

(*Hold, stop, cease and desist. You make it sound as though* Picture Maker *is destined for obscurity — which we hope it isn't, complaints about the instructions notwithstanding. I'm supposed to edit these things, not rewrite them. A CAD program is one which is dedicated to a technical design function, usually electronics or engineering. What we have here is a non-dedicated design, or graphics, package. This mistake is becoming increasingly commonplace. —Ed*)

Picture Maker allows you to design and manipulate PMODE3 graphics in a variety of ways, using either the cursor keys or a joystick.

Lines are drawn by a cursor which appears either as a dot or a cross, which moves both horizontally and vertically. As the program loads you will begin to see an example of the graphics *Picture Maker* can produce. The screen dump which should appear alongside this review is not high quality, but shows you what effects can be produced.

Once the program loads you can either run it, print the instructions to a printer or read them on screen to a musical accompaniment from the author's *Music Maker 2*. The program offers green, yellow, blue, red, buff, cyan, orange and magenta as well as black and white in screen1,1. The background and foreground are easily changeable. Pressing @ moves you into SCREEN1,1 graphics.

Once the program loads you can either run it, print the instructions, or read them on screen to a musical accompaniment.

Picture Maker has a variety of brushes, some not very clear in the instruction sheet, but including Putset, Putnot, Rubber, Line and others. The choice seems limited to me, and perhaps David Makin could have been more adventurous here.

The program can also draw circles, boxes and lines independently, and can FILL areas in any of the goreground colours.

There is always the risk of losing your creation with a graphics program. As well as being able to load and save onto tape, you can store pictures in one of eight available locations. The GET and PUT commands are particularly useful here and allow graphics to be stored and recalled anywhere on the screen, either in their original form or inverted. Stored areas can also be stretched up to three times their original size.

One of the most important features is the MAGNIFY command. This magnifies the area of the screen where the cursor is situated many times over, allowing you to produce very detailed graphics more easily.

Should you find that you have started your drawing too high or low on the screen, you can scroll the screen contents left, right, up or down. A fascinating feature is the ability to MIRROR graphics using R, and also to turn the view screen upside-down.

Overall, the only drawback to *Picture Maker* is that the instructions are far too complex. Those who know how to use this kind of program may not think so, but the average user is bound to feel insecure. Given a simpler or clearer instruction sheet the program would be perfect for its task.

One thing which I did miss was the ability to print text on the screen without first having to draw it. It would be better if the user could enter text from the keyboard — instead, you must draw it by hand with the MAGNIFY command to help you.

Accompanying *Picture Maker* is a screen dump program which can be altered to suit almost every printer. First you must enter the appropriate codes for your printer, similarly to *Electronic Author*'s CONFIG program.

Picture Maker's sheer power is surprising. I cannot explain everything it is capable of. It is the most sophisticated graphics program I have seen. If you can master the rather complex instructions, you should have no trouble creating your own graphics.

Donald Morrison

Sound house

Wayne Smithson takes a sound sample.

AS the name suggests, this program is a sound digitiser (with frilly bits). It lets you sample sounds using the cassette port — this does not necessarily mean that you have to sample from a cassette recorder. You can sample sounds using a microphone or by connecting other computers to le Dragon.

Sounds are digitised and stored in memory, you can digitise more than one sound by altering the memory size (explained later). Once you have the sound you can then speed it up or slow it down and save or load to disc/cass. An extra facility of this program is an 'analyzer' section. This listens to ordinary music tapes and displays coloured bars bouncing about accordingly. Yes, Your Dragon can Boogie.

First of all type in **listing one**1, this is the Basic controller program that is used for disk or cassette I/O, and save that to disc or cassette, whichever you're using, as 'SNDHOUSE'. Note the changes for the cassette version. The messing about with the PEEKs in lines 120 and 170 are for finding the start and end addresses of files being saved or loaded. The Basic controller also loads in the machine code which lives at address 3072 to 4094 inclusive.

Once that has been typed in and saved, NEW the program, and type in **listing two**, the hex loader. From line 100 onwards, you must type in the data contained in **listing three** — forget about the numbers before the asterix (*). The first data lines would be then:

100 DATA 10,FF,OF,FE,OF,FF,1A,50,B6
110 DATA FF,23,8A,08,B7,FF,23,7E,0C

When all the data has been typed in, it would be a good idea to save it onto disc or a separate cassette just in case it doesn't work when you run it. Once the data is typed in and the program saved, RUN it. You will see the numbers appearing on the screen as they are POKEd into memory.

Providing you have saved the Basic hex loader with all its data, you may now test the machine code by typing EXEC3072. This is the point at which you will know if there are any errors in your data or not. If you are greeted with a blank screen or flashing bits or funny noises then there is an error in your data. If you are greeted with a chessboard then you've typed in the wrong listing. What you should get is a menu on screen listing the various options available to you. Pressing either BREAK, L or S should return you back to Basic at which point you should save the code as 'SHCODE':

SAVE"SHCODE",3072,4094,3072 (for disc)
CSAVEM"SHCODE",3072,4094,3072 (for cassette, to be saved on tape after the Basic controller — **listing one**)

To use *Soundhouse* then, from disc just type RUN"SNDHOUSE", from cassette, CLOAD"SNDHOUSE" then RUN. Alternatively you can save the Basic bit using the autorun program in a past issue of DU and use CLOADM to load the lot in.

And now, on to actually using *Soundhouse*; firstly make sure that the ear and record sockets are connected between the Dragon and your cassette recorder and unplug the remote jack. I will take each option in turn and describe what they do.

A: GO TO ANALYZER. This passes control to the pretty boogying bars which are of no use whatsoever but who cares? It's fun. Play any music tape, the sound will come from the TV and the coloured bars will move up and down with the music. As I say, completely useless, but it's nice to watch. Pressing the BREAK key will return you to the main menu.

D: DIGITISE SOUND. Guess what this does? Yep, you guessed it. Sound is sampled from the cassette port and stored in memory between START and END shown at the bottom of the screen. The speed of sampling is set by SPEED, a value of $OB is a good speed to use. Playing music tapes while digitising will of course result in that music being digitised. The quality from tape is a bit grotty because the sampler picks up the background noise but you can definitely hear your Dragon playing back the Eurythmics or Status Quo. To digitise your own voice, it is best to do it directly using a microphone. To do this, just plug your microphone into the RECord socket, make sure the ear socket is connected and that there is no tape in the recorder. You need to press PLAY and RECORD down on the cassette recorder, and to do that without having a tape in you will have to push the switch at the back LHS of the recorder in with your finger. You can then talk into the microphone and it will be instantly played through the TV and digitised. You can also digitise sounds made by other computers (Commodore 64 is best) by connecting the audio out and ground from the C64's monitor socket straight into the ear socket on the Dragon. I would only advise doing this if you know what you are doing. (I don't, and thanks go to Dave Gibbons and Mark Parry for telling me how to do that). The effects are much better though.

P: PLAYBACK SOUND (SINGLE). This plays back your digitised sound at the speed set by SPEED. If you alter the speed after digitising, your Status Quo can sound like the Smurfs or a record at half speed. You can play back part of your sample by altering the memory boundaries START and END. Data is not lost by moving these.

C: PLAYBACK SOUND (CIRCULAR). As for P but plays the sample over and over again until you HOLD DOWN any key. You may have to hold the key down for quite a while for it to stop.

S/L: SAVE/LOAD SAMPLED SOUND. These speak for themselves and saves the sampled sound between the START and END addresses inclusive. Loaded samples are placed in memory where they were originally saved from.

R: RESET MEMORY TO FULL SIZE. This places the ADDRESS &H1770 (6000) into START and the address &H7FFF (32767) into END to maximise the amount of memory available for samples.

ARROW KEYS: ALTER MEMORY SIZE. The arrow keys move the memory boundaries around. Using this feature allows you to pick out certain parts of a sample like a word for instance. Right/left arrows control END and up/down arrows control START. Pressing the SHIFT key will speed things up considerably.

< >: ALTER DIGITISER SPEED. Obviously pressing either < or > (shift key not needed) will alter the SPEED of digitising or playback. With this you can find out what you sound like at 78 rpm or at 33.3 rpm.

```
LISTING 1: BASIC CONTROLLER
10 '*****************************'
20 '* SOUNHOUSE SOUND SAMPLER *'
30 '* (C) 1987 WAYNE SMITHSON *'
40 '*****************************'
50 '
60 PMODE0:PCLEAR1:CLEAR100,5999:
AUDIOON:POKE251,&H17:POKE252,&H7
0:POKE253,&H7F:POKE254,&HFF:LOAD
"SHCODE.BIN":CLOSE
70 POKE&H0605,1:FORD=0TO99:NEXT
80 EXEC3072
90 IFPEEK(255)=1 THEN110 ELSEIFP
EEK(255)=2 THEN150
100 END
110 CLS:PRINT:INPUT"SAVE NAME";N
```

```
$
120 S=PEEK(251)*256+PEEK(252):E=
PEEK(253)*256+PEEK(254):PRINT:PR
INT:PRINT"START ADDRESS:"S;TAB(2
5);HEX$(S),"  END ADDRESS:"E;TAB
(25);HEX$(E),"  MEMORY USED:"E-S
;TAB(25);HEX$(E-S)
130 SAVEN$+".DIG",S,E,359:CLOSE
140 GOTO70
150 CLS:PRINT:INPUT"LOAD NAME";N
$
160 LOADN$+".DIG":CLOSE
170 POKE251,PEEK(1618):POKE252,P
EEK(1619):Z=PEEK(251)*256+PEEK(2
52):Z=Z+PEEK(1620)*256+PEEK(1621
)-1:POKE253,INT(Z/256):POKE254,Z
-INT(Z/256)*256
180 GOTO70
190 '
200 'TYPE "GOTO70" IF AN ERROR
210 'OCCURS IN THE PROGRAM.
```

CHANGES FOR CASSETTE VERSION

```
60 PMODE0:PCLEAR2:CLEAR100,5999:
AUDIOON:POKE251,&H17:POKE252,&H7
0:POKE253,&H7F:POKE254,&HFF:CLOA
DM"SHCODE"
70 REM
130 CSAVEM N$,S,E,359
160 CLOADM N$
170 POKE251,PEEK(487):POKE252,PE
EK(488):POKE253,PEEK(126):POKE25
4,PEEK(127)
```

```
10 'HEX LOADER FOR SOUNDHOUSE
20 '
30 PCLEAR4:CLS:PRINT@224,"ADDRES
S:","VALUE:"
40 FORN=3072TO4094
50 READA$:POKEN,VAL("&H"+A$)
60 PRINT@232,N;:PRINT@246,VAL("&
H"+A$)
70 NEXTN
80 END
90 'PUT DATA HERE
100 DATA .....
```

```
0C00*10 FF 0F FE 0F FF 1A 50 B6
0C09*FF 23 8A 08 B7 FF 23 7E 0C
0C12*F6 CE FF 01 8D 00 A6 C4 84
0C1B*F7 56 24 02 8A 08 A7 C1 39
0C24*86 0F 8E 10 00 A7 80 8C 10
0C2D*20 26 F9 86 80 8E 04 00 A7
0C36*80 8C 06 00 26 F9 BD 80 06
0C3F*81 03 10 27 00 B1 8E 04 00
0C48*CE 10 00 86 8F 97 E7 13 34
0C51*10 A6 C4 C6 20 3D 30 8B B6
0C5A*FF 20 97 E8 B6 FF 20 9A E8
0C63*84 01 27 0D 96 E7 A7 88 E0
0C6C*A6 C4 27 10 6A C4 20 0C 86
0C75*80 A7 84 A6 C4 81 0F 24 02
0C7E*6C C4 35 10 96 E7 8B 10 8A
0C87*80 97 E7 33 41 30 01 8C 04
0C90*20 25 BD 20 A7 8E 05 E0 9F
0C99*88 8E 0F E0 96 FB 8D 3A ED
0CA2*81 96 FC 8D 34 ED 84 8E 0F
0CAB*E9 96 FD 8D 2B ED 81 96 FE
0CB4*8D 25 ED 81 DC FD 93 FB D7
0CBD*E7 8E 0F F2 8D 18 ED 81 96
0CC6*E7 8D 12 ED 81 8E 0F FB B6
0CCF*0D 95 8D 08 ED 84 8E 0F DE
0CD8*7E 90 E5 34 02 44 44 44 44
0CE1*8B 30 81 39 23 02 8B 07 35
0CEA*04 C4 0F CB 30 C1 39 23 02
0CF3*CB 07 39 BD BA 77 8E 0E 8B
0CFC*BD 90 E5 BD 90 E5 8E 04 00
0D05*A6 84 84 BF A7 80 8C 05 E0
0D0E*26 F5 8D 83 BD 80 06 81 03
0D17*10 27 00 D5 81 41 10 27 FF
0D20*03 81 44 27 5C 81 50 10 27
0D29*00 88 81 43 10 27 00 7D 81
0D32*53 10 27 00 B3 81 4C 10 27
0D3B*00 B1 81 52 10 27 01 3C 81
0D44*2E 10 27 00 AE 81 2C 10 27
0D4D*00 B9 81 08 10 27 00 C7 81
0D56*09 10 27 00 E7 81 0A 10 27
0D5F*01 11 81 5E 10 27 00 F2 81
0D68*15 10 27 00 A5 81 5D 10 27
0D71*00 C4 81 5B 10 27 00 EE 81
0D7A*5F 10 27 00 D0 20 91 9E FB
0D83*C6 08 D7 E7 B6 FF 20 46 56
0D8C*C5 01 27 04 10 21 FF FC 86
0D95*0B 4A 26 FD 0A E7 26 EA E7
0D9E*80 F7 05 FF 9C FD 25 DD 86
0DA7*60 B7 05 FF 7E 0D 12 97 FA
0DB0*5F 20 03 5F D7 FA BD 0C 13
0DB9*9E FB C6 08 D7 E7 A6 80 9C
0DC2*FD 24 14 5F 46 24 02 C6 7F
0DCB*F7 FF 20 C6 0B 5A 26 FD 0A
0DD4*E7 26 EE 20 E2 96 FA 27 05
0DDD*BD 80 06 27 D7 C6 01 BD 0C
0DE6*13 7E 0D 12 86 01 20 02 86
0DEF*02 97 FF 10 FE 0F FE 39 B6
0DF8*0D 95 81 10 24 01 4C B7 0D
0E01*95 B7 0D CF 7E 0D 10 B6 0D
0E0A*95 81 01 27 F0 4A 20 ED DC
0E13*FD 83 00 80 10 93 FB 22 0A
0E1C*DC FD 10 93 FB 23 05 83 00
0E25*01 DD FD 86 FF 8E 01 50 A7
0E2E*80 8C 01 5A 26 F9 7E 0D 10
0E37*DC FD C3 00 80 10 83 7F FF
0E40*23 E4 DC FD 10 83 7F FF 24
0E49*DE C3 00 01 20 D7 DC FB C3
```

```
0E52*00 80 10 93 FD 25 0A DC FB
0E5B*10 93 FD 24 03 C3 00 01 DD
0E64*FB 20 C1 DC FB 83 00 80 10
0E6D*83 17 70 22 F1 DC FB 10 83
0E76*17 70 23 E9 83 00 01 20 E4
0E7F*8E 17 70 9F FB 8E 7F FF 9F
0E88*FD 7E 0D 10 53 4F 55 4E 44
0E91*48 4F 55 53 45 20 53 4F 55
0E9A*4E 44 20 53 41 4D 50 4C 45
0EA3*52 20 28 43 29 31 39 38 37
0EAC*20 20 20 57 52 49 54 54 45
0EB5*4E 20 42 59 3A 20 57 41 59
0EBE*4E 45 20 53 4D 49 54 48 53
0EC7*4F 4E 0D 0D 41 3A 20 47 4F
0ED0*20 54 4F 20 41 4E 41 4C 49
0ED9*5A 45 52 0D 44 3A 20 44 49
0EE2*47 49 54 49 5A 45 20 53 4F
0EEB*55 4E 44 0D 50 3A 20 50 4C
0EF4*41 59 42 41 43 4B 20 53 4F
0EFD*55 4E 44 20 28 53 49 4E 47
0F06*4C 45 29 0D 43 3A 20 50 4C
0F0F*41 59 42 41 43 4B 20 53 4F
0F18*55 4E 44 20 28 43 49 52 43
0F21*55 4C 41 52 29 0D 53 3A 20
0F2A*53 41 56 45 20 53 41 4D 50
0F33*4C 45 44 20 53 4F 55 4E 44
0F3C*0D 4C 3A 20 4C 4F 41 44 20
0F45*53 41 4D 50 4C 45 44 20 53
0F4E*4F 55 4E 44 0D 52 3A 20 52
0F57*45 53 45 54 20 4D 45 4D 4F
0F60*52 59 20 54 4F 20 46 55 4C
0F69*4C 20 53 49 5A 45 0D 00 41
0F72*52 52 4F 57 20 4B 45 59 53
0F7B*3A 20 41 4C 54 45 52 20 4D
0F84*45 4D 4F 52 59 20 53 49 5A
0F8D*45 0D 3C 3E 3A 20 41 4C 54
0F96*45 52 20 44 49 47 49 54 49
0F9F*5A 45 52 20 53 50 45 45 44
0FA8*0D 42 52 45 41 4B 3A 20 45
0FB1*58 49 54 20 50 52 4F 47 52
0FBA*41 4D 0D 0D 53 54 41 52 54
0FC3*20 20 20 20 20 45 4E 44 20
0FCC*20 20 20 20 4C 45 4E 47 54
0FD5*48 20 20 20 53 50 45 45 44
0FDE*00 24 30 30 30 30 20 20 20
0FE7*20 24 30 30 30 30 20 20 20
0FF0*20 24 30 30 30 30 20 20 20
0FF9*20 24 30 30 00 00 00 00 00
```

```
1770                 **********************************
1770                 *  SOUNDHOUSE  (DRAGON 32/64)  *
1770                 *   (C) 1987  WAYNE SMITHSON   *
1770                 **********************************
1770
0C00  0C00                 ORG #3072
0C00                       PUT #3072
0C00  00FF           FLAG   EQU #255
0C00  00FD           EADDR  EQU #253
0C00  00FB           SADDR  EQU #251
0C00
0C00 10FF0FFE              STS TEMP
0C04 0FFF                  CLR FLAG
0C06 1A50                  ORCC #$50
0C08 B6FF23                LDA $FF23
0C0B 8A08                  ORA #8
0C0D B7FF23                STA $FF23
0C10 7E0CF6                JMP SAMP
0C13 CEFF01          SETS   LDU #$FF01
0C16 8D00                  BSR *+2
0C18 A6C4                  LDA ,U
0C1A 84F7                  ANDA #$F7
0C1C 56                    RORB
0C1D 2402                  BCC JSB7
0C1F 8A08                  ORA #8
0C21 A7C1            JSB7   STA ,U++
0C23 39                    RTS
0C24
0C24                 *  SPECTRAL ANALIZER ROUTINE   *
0C24
0C24 860F            ANAL   LDA #15
0C26 8E1000                LDX #TABLE
0C29 A780            CT     STA ,X+
0C2B 8C1020                CMPX #ETAB
0C2E 26F9                  BNE CT
0C30 8680                  LDA #128
0C32 8E0400                LDX #1024
0C35 A780            CLS    STA ,X+
0C37 8C0600                CMPX #1536
0C3A 26F9                  BNE CLS
0C3C BD8006          NSCRN  JSR $8006
0C3F 8103                  CMPA #3
0C41 102700B1              LBEQ SAMP
0C45 8E0400                LDX #1024
0C48 CE1000                LDU #TABLE
0C4B 868F                  LDA #143
0C4D 97E7                  STA 231
0C4F 13                    SYNC
0C50 3410            LOOP   PSHS X
0C52 A6C4                  LDA ,U
0C54 C620                  LDB #32
0C56 3D                    MUL
0C57 308B                  LEAX D,X
0C59 B6FF20                LDA $FF20
0C5C 97E8                  STA 232
0C5E B6FF20                LDA $FF20
0C61 9AE8                  ORA 232
0C63 8401                  ANDA #1
0C65 270D                  BEQ ZERO
0C67 96E7                  LDA 231
0C69 A788E0                STA -32,X
0C6C A6C4                  LDA ,U
0C6E 2710                  BEQ SETL
0C70 6AC4                  DEC ,U
0C72 200C                  BRA SETL
0C74 8680            ZERO   LDA #128
0C76 A784                  STA ,X
0C78 A6C4                  LDA ,U
0C7A 810F                  CMPA #15
0C7C 2402                  BHS SETL
0C7E 6CC4                  INC ,U
0C80 3510            SETL   PULS X
0C82 96E7                  LDA 231
0C84 8B10                  ADDA #16
0C86 8A80                  ORA #128
0C88 97E7                  STA 231
0C8A 3341                  LEAU 1,U
0C8C 3001                  LEAX 1,X
0C8E 8C0420                CMPX #1056
0C91 25BD                  BLO LOOP
0C93 20A7                  BRA NSCRN
0C95
0C95                 *  DISPLAY BOTTOM STATUS LINE  *
0C95
0C95 8E05E0          STATUS LDX #1504
0C98 9F88                  STX $88
0C9A 8E0FE0                LDX #STAT+1
0C9D 96FB                  LDA SADDR
0C9F 8D3A                  BSR HEX
0CA1 ED81                  STD ,X++
0CA3 96FC                  LDA SADDR+1
0CA5 8D34                  BSR HEX
0CA7 ED84                  STD ,X
0CA9 8E0FE9                LDX #STEN+1
0CAC 96FD                  LDA EADDR
0CAE 8D2B                  BSR HEX
```

```
0CB0 ED81             STD ,X++
0CB2 96FE             LDA EADDR+1
0CB4 8D25             BSR HEX
0CB6 ED81             STD ,X++
0CB8 DCFD             LDD EADDR
0CBA 93FB             SUBD SADDR
0CBC D7E7             STB 231
0CBE 8E0FF2           LDX #STLE+1
0CC1 8D18             BSR HEX
0CC3 ED81             STD ,X++
0CC5 96E7             LDA 231
0CC7 8D12             BSR HEX
0CC9 ED81             STD ,X++
0CCB 8E0FFB           LDX #STDY+1
0CCE B60D95           LDA D1+1
0CD1 8D08             BSR HEX
0CD3 ED84             STD ,X
0CD5 8E0FDE           LDX #STAT-1
0CD8 7E90E5           JMP $90E5
0CDB
0CDB            *  RETURN NUMBER IN HEX CHARS  *
0CDB
0CDB 3402       HEX   PSHS A
0CDD 44               LSRA
0CDE 44               LSRA
0CDF 44               LSRA
0CE0 44               LSRA
0CE1 8B30             ADDA #'0
0CE3 8139             CMPA #'9
0CE5 2302             BLS NNYB
0CE7 8B07             ADDA #7
0CE9 3504       NNYB  PULS B
0CEB C40F             ANDB #15
0CED CB30             ADDB #'0
0CEF C139             CMPB #'9
0CF1 2302             BLS HEXO
0CF3 CB07             ADDB #7
0CF5 39         HEXO  RTS
0CF6
0CF6            *  MAIN SAMPLER MENU DISPLAY  *
0CF6
0CF6 BDBA77     SAMP  JSR $BA77
0CF9 8E0E8B           LDX #M1-1
0CFC BD90E5           JSR $90E5
0CFF BD90E5           JSR $90E5
0D02 8E0400           LDX #1024
0D05 A684       TOP   LDA ,X
0D07 84BF             ANDA #191
0D09 A780             STA ,X+
0D0B 8C05E0           CMPX #1504
0D0E 26F5             BNE TOP
0D10 8D83       UPDAT BSR STATUS
0D12 BD8006     KEYP  JSR $8006
0D15 8103             CMPA #3
0D17 102700D5         LBEQ OUT
0D1B 8141             CMPA #'A
0D1D 1027FF03         LBEQ ANAL
0D21 8144             CMPA #'D
0D23 275C             BEQ DIGI
0D25 8150             CMPA #'P
0D27 10270088         LBEQ PLAY
0D2B 8143             CMPA #'C
0D2D 1027007D         LBEQ CIRC
0D31 8153             CMPA #'S
0D33 102700B3         LBEQ SAVE
0D37 814C             CMPA #'L
0D39 102700B1         LBEQ LOAD
```

```
0D3D 8152             CMPA #'R
0D3F 1027013C         LBEQ RESET
0D43 812E             CMPA #'.
0D45 102700AE         LBEQ SPUP
0D49 812C             CMPA #',
0D4B 102700B9         LBEQ SPDN
0D4F 8108             CMPA #8
0D51 102700C7         LBEQ LA
0D55 8109             CMPA #9
0D57 102700E7         LBEQ RA
0D5B 810A             CMPA #10
0D5D 10270111         LBEQ DA
0D61 815E             CMPA #94
0D63 102700F2         LBEQ UA
0D67 8115             CMPA #21
0D69 102700A5         LBEQ SLA
0D6D 815D             CMPA #93
0D6F 102700C4         LBEQ SRA
0D73 815B             CMPA #91
0D75 102700EE         LBEQ SDA
0D79 815F             CMPA #95
0D7B 102700D0         LBEQ SUA
0D7F 2091             BRA KEYP
0D81
0D81            *     DIGITIZER ROUTINE        *
0D81
0D81 9EFB       DIGI  LDX SADDR
0D83 C608       NBYTE LDB #8
0D85 D7E7             STB 231
0D87 B6FF20     GBYTE LDA $FF20
0D8A 46               RORA
0D8B 56               RORB
0D8C C501             BITB #1
0D8E 2704             BEQ D1
0D90 1021FFFC         LBRN *
0D94 860B       D1    LDA #11
0D96 4A         PZ1   DECA
0D97 26FD             BNE PZ1
0D99 0AE7             DEC 231
0D9B 26EA             BNE GBYTE
0D9D E780             STB ,X+
0D9F F705FF           STB 1535
0DA2 9CFD             CMPX EADDR
0DA4 25DD             BLO NBYTE
0DA6 8660             LDA #96
0DA8 B705FF           STA 1535
0DAB 7E0D12           JMP KEYP
0DAE
0DAE            *      PLAYBACK ROUTINE        *
0DAE
0DAE 97FA       CIRC  STA 250
0DB0 5F               CLRB
0DB1 2003             BRA SK2
0DB3 5F         PLAY  CLRB
0DB4 D7FA             STB 250
0DB6 BD0C13     SK2   JSR SETS
0DB9 9EFB       PLAY2 LDX SADDR
0DBB C608       PNB   LDB #8
0DBD D7E7             STB 231
0DBF A680             LDA ,X+
0DC1 9CFD             CMPX EADDR
0DC3 2414             BHS POUT
0DC5 5F         PRB   CLRB
0DC6 46               RORA
0DC7 2402             BCC SKIP
0DC9 C67F             LDB #$7F
0DCB F7FF20     SKIP  STB $FF20
```

```
0DCE C60B        D2     LDB #11
0DD0 5A          PZ2    DECB
0DD1 26FD               BNE PZ2
0DD3 0AE7               DEC 231
0DD5 26EE               BNE PRB
0DD7 20E2               BRA PNB
0DD9 96FA        POUT   LDA 250
0DDB 2705               BEQ SIN
0DDD BD8006             JSR $8006
0DE0 27D7               BEQ PLAY2
0DE2 C601        SIN    LDB #1
0DE4 BD0C13             JSR SETS
0DE7 7E0D12             JMP KEYP
0DEA
0DEA             * SET SAVE/LOAD FLAG FOR BASIC *
0DEA
0DEA 8601        SAVE   LDA #1
0DEC 2002               BRA OUT
0DEE 8602        LOAD   LDA #2
0DF0 97FF        OUT    STA FLAG
0DF2 10FE0FFE           LDS TEMP
0DF6 39                 RTS
0DF7
0DF7             *  CHANGE DIGI/PLAYBACK SPEED  *
0DF7
0DF7 B60D95      SPUP   LDA D1+1
0DFA 8110               CMPA #16
0DFC 2401               BHS CON
0DFE 4C                 INCA
0DFF B70D95      CON    STA D1+1
0E02 B70DCF             STA D2+1
0E05 7E0D10             JMP UPDAT
0E08 B60D95      SPDN   LDA D1+1
0E0B 8101               CMPA #1
0E0D 27F0               BEQ CON
0E0F 4A                 DECA
0E10 20ED               BRA CON
0E12
0E12             *   CHANGE MEMORY ALLOCATION   *
0E12
0E12 DCFD        SLA    LDD EADDR
0E14 830080             SUBD #128
0E17 1093FB             CMPD SADDR
0E1A 220A               BHI CON2
0E1C DCFD        LA     LDD EADDR
0E1E 1093FB             CMPD SADDR
0E21 2305               BLS CON4
0E23 830001             SUBD #1
0E26 DDFD        CON2   STD EADDR
0E28 86FF        CON4   LDA #$FF
0E2A 8E0150             LDX #$150
0E2D A780        CLKB   STA ,X+
0E2F 8C015A             CMPX #$15A
0E32 26F9               BNE CLKB
0E34 7E0D10             JMP UPDAT
0E37 DCFD        SRA    LDD EADDR
0E39 C30080             ADDD #128
0E3C 10837FFF           CMPD #$7FFF
0E40 23E4               BLS CON2
0E42 DCFD        RA     LDD EADDR
0E44 10837FFF           CMPD #$7FFF
0E48 24DE               BHS CON4
0E4A C30001             ADDD #1
0E4D 20D7               BRA CON2
0E4F DCFB        SUA    LDD SADDR
0E51 C30080             ADDD #128
0E54 1093FD             CMPD EADDR
0E57 250A               BLO CON3
0E59 DCFB        UA     LDD SADDR
0E5B 1093FD             CMPD EADDR
0E5E 2403               BHS CON3
0E60 C30001             ADDD #1
0E63 DDFB        CON3   STD SADDR
0E65 20C1               BRA CON4
0E67 DCFB        SDA    LDD SADDR
0E69 830080             SUBD #128
0E6C 10831770           CMPD #$1770
0E70 22F1               BHI CON3
0E72 DCFB        DA     LDD SADDR
0E74 10831770           CMPD #$1770
0E78 23E9               BLS CON3
0E7A 830001             SUBD #1
0E7D 20E4               BRA CON3
0E7F
0E7F             *  RESET MEMORY TO FULL SIZE   *
0E7F
0E7F 8E1770      RESET  LDX #$1770
0E82 9FFB               STX SADDR
0E84 8E7FFF             LDX #$7FFF
0E87 9FFD               STX EADDR
0E89 7E0D10             JMP UPDAT
0E8C
0E8C 534F554E44  M1     FCC /SOUNDHOUSE SOUND SA/
0E9F 4D504C4552         FCC /MPLER (C)1987/
0EAC 2020205752         FCC /   WRITTEN BY: WAYN/
0EBF 4520534D49         FCC /E SMITHSON/,13,13
0ECB 413A20474F         FCC /A: GO TO ANALIZER/
0EDC 0D                 FCB 13
0EDD 443A204449         FCC /D: DIGITIZE SOUND/
0EEE 0D                 FCB 13
0EEF 503A20504C         FCC /P: PLAYBACK SOUND (/
0F02 53494E474C         FCB /SINGLE)/,13
0F0A 433A20504C         FCC /C: PLAYBACK SOUND (/
0F1D 4349524355         FCC /CIRCULAR)/,13
0F27 533A205341         FCC /S: SAVE SAMPLED SOU/
0F3A 4E440D             FCC /ND/,13
0F3D 4C3A204C4F         FCC /L: LOAD SAMPLED SOU/
0F50 4E440D             FCC /ND/,13
0F53 523A205245         FCC /R: RESET MEMORY TO /
0F66 46554C4C20         FCC /FULL SIZE/,13,0
0F71 4152524F57         FCC /ARROW KEYS: ALTER M/
0F84 454D4F5259         FCC /EMORY SIZE/,13
0F8F 3C3E3A2041         FCC /<>: ALTER DIGITIZE/
0FA1 5220535045         FCC /R SPEED/,13
0FA9 425245414B         FCC /BREAK: EXIT PROGRAM/
0FBC 0D0D               FCB 13,13
0FBE 5354415254         FCC /START      END     L/
0FD1 454E475448         FCC /ENGTH    SPEED/,0
0FDF 2430303030 STAT    FCC /$0000       /
0FE8 2430303030 STEN    FCC /$0000       /
0FF1 2430303030 STLE    FCC /$0000       /
0FFA 24303000   STDY    FCC /$00/,0
0FFE 0000       TEMP    FDB 0
1000            TABLE   RMB 32
1020 12         ETAB    NOP
1021
```

Expert's Arcade Arena

Write to 'The Expert' at Dragon User
49 Alexandra Road
Hounslow, Middx TW3 4HP

AH, the sweet fragrance of Autumn dwindles throughout the Dragon world, and with it brings a host of new titles, new news, and even more exciting, a new Expert the services of whom you have for one month only, so enjoy and savour.

Straight down to business, and indeed, the Expert, ladies and gentlemen, boys, girls and even the Editor is proud to present the A-Z guide to Dragon arcade games so far released this year. So with no further ado, take it away ...

CRAZY FOOTA 2/3 (Orange Software): Released on the verge of 1988, and priced at £2.99, the *Crazy Foota* destiny continues, this time offering a vast improvement on *Crazy Foota 1*, which reminded me of a program I once wrote on a ZX-80. However, it has all changed, this time incorporating colour graphics, along with several other new additions.

Your goal (?) is of course to defeat the opposition be it microchip or human using eleven players, symbolized on the screen as being eleven 'match-stick men', who may only be moved in a horizontal line. This subsequently results in the game being one of strategy more than arcade, but none the worse for that.

This certainly offers a stark contrast to that of *Indoor Football*, with an equally contrasting price, easily justifying the outlay.

Track designer

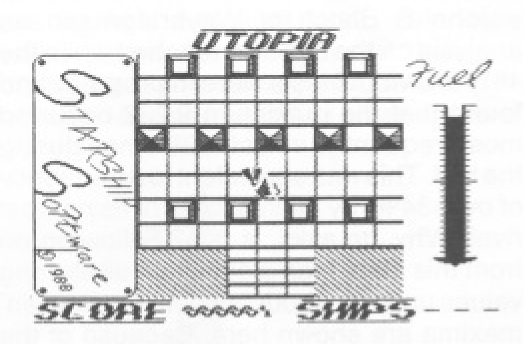
BUST-OUT (Dragonfire Services): Not being in the luxurious position of having a crystal ball, I am unable to comment on this game as, at the time of writing, it has yet to be released. However, dusting off old cobwebs, I am assured by Andrew Hill of Dragonfire that this is solely based upon *Breakout*, which was seemingly first released when cavemen first discovered the wheel. Will it survive the test of time? Only time will tell...

FORMULA ONE (Pamcomms): Released at the London show in December 1987, but still worthy of mention, this version of Scalectrix has already over-taken *Speed Racer* and looks geared to become one of the best all-round games produced for the Dragon.

On a split screen format, would-be Nigel Mansells have the option of racing either the computer or a friend, along with having the additional option of being able to design his/her/its very own tracks, utilising a separate program hidden on side B. Congratulations to Pam D'Arcy on an exceptional game, which incidentally is her first for the Dragon... I sincerely hope it isn't her last.

(*Sincerity doesn't always pay—Ed.*)

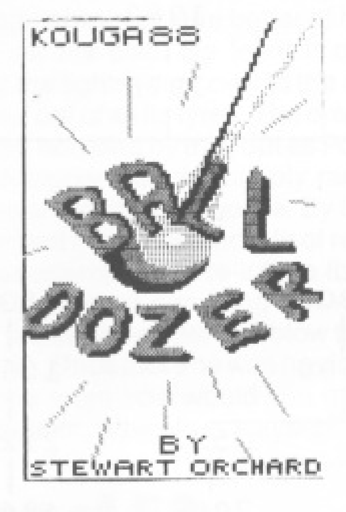
LUCIFER'S KINGDOM (Orange Software): Priced at £5.95, *Lucifer's Kingdom*, in my immortal opinion, deserves to be at the top of any list which may find its way to Santa in forthcoming months. Comprised of detailed scrolling graphics, the game's aim is to find and defeat the elusive Lucifer. Having other ideas, eight sets of menacing aliens act as a speedy and seemingly never ending obstacle course, to which you must weave, dodge and generally blast to Woo-ga-woo-ga land. This tantalizingly addictive game should not be missed, acting as a much needed stimulant now the cold, dark, evenings are almost upon us.



MANDRAGORE (Kouga Software): I once had a friend who believed the Dragon, as a games machine, was a shambles. Looking back at the archives, it was hard to argue against that point.

However, one brief glimpse of *Mandragore*, available at only £4.00, would easily dispel any myths, as without a doubt, if this quality of software is maintained, the Dragon is set to rival any 8 bit machine, purely on the strength of it being a games machine.

You play the part of Mandragore an advanced robot, the aim of whom is to battle through two levels of mummies, trapped



eagles, aardvarks, and anything else one could possibly imagine.

On the basis of my brief glimpse, Kouga Software is definitely a name to watch out for.

SUPA NOVA (Orange Software): *Supa Nova* is prominently based on the oldie but certainly not goldie *Meteroids*, which many of you may have found to accompany your Dragon 32 upon purchasing it.

As you may have already gathered, I am not the most ardent fan of *Meteroids* and I am afraid this version does not inspire me enough to change my views.

For the record, your aim is to blast everything in sight to smithereens however, instead of inheriting a more powerful 'zapper' the intrepid captain must, in my view, laboriously place protons (mines) in the hope that an unsuspecting meteroid should trigger them off, which in turn, creates more smaller, if not faster, unsuspecting meteroids.

Even with an 'economical' price tag of £2.99 I am only able to recommend this game to those to whom *Meteroids* is the best thing since Neighbours, and who require a varying version of an old flame if not an old pain.

UTOPIA (Pulser): Fresh from the clutches of Jonathan Cartwright, it has been said that this is very similar to the aforementioned *Lucifer's Kingdom*, although, while I find the basic elements of the game to be of a kind, the only other aspect of the game which I can view as being similar is the fact that they are both truly excellent games, unsurpassed by any other in their field.

Your aim is to escape, as the title suggests, from the planet *Utopia*, and in doing so, escaping from the unique defence system, avoiding Kamakaze style space craft, amidst objects strewn on the planet's surface.

As already stated, priced at £5.45, this game carries my thorough recommendation, and indeed, rather than picking between *Lucifer's Kingdom* and this, I would venture to suggest you purchase both, as you are unlikely to find better.

Small but perfect

Quality comes before quantity, and that's certainly how the Dragon arcade scene looks at this precise chapter in time. In order to keep the continuing stream of new released coming, the firm message from the suppliers suggests that they urgently require more support. With the current quality of arcade games being produced, there are few who deserve it more so.

My final message to you, my loyal friends, before I slip off into the voids of the editorial bin, never to be seen again, is support them to support you. You (and your bulging wallet) have the golden opportunity to do so at the Arosfa Hotel, Weston Super Mare, on Sunday December 4. In the humble words of the Four Tops, 'I'll be there ...' Don't let that put you off, will you? After all, it wouldn't be much of a show without you, would it? Good night.

Winners and Losers

Every month Gordon Lee will look at some prize programming

THE ups and downs of 'hailstone' numbers formed the basis of the June competition. "What is the smallest starting number which will, while being hailstoned, produce a maximum which exceeds one million", we asked. The vital words in the questions were "The smallest *starting* number ...", so those of you who did a quick calculation and worked backwards from 1,000,006 to arrive at 333,335 were well off the mark. All of the entries which attempted a 'work backwards' approach often using quite refined programming ended up becoming enmeshed in an ever-increasing tangle of diverging pathways. Unfortunately, while following any number to its conclusion in the normal manner is simplicity itself, attempting to trace that path backwards is virtually impossible.

The reason is not hard to find. Certain numbers can be formed from *two* possible generators, and on reaching one of these there are two paths which need to be followed. For example, working backwards from 52 we can go to either 104 or 17. In fact, any number in the form 6z + 4 where z is any positive integer will present this divergence. Consequently, we would expect to reach such a number every six steps, after which we must continue to trace two separate paths, which will themselves branch before long, and so on.

As an example of this type of approach the current year 1988 has been worked backwards for a few steps and it can be seen that after only nine iterations the initial value has diverged into twelve separate channels.

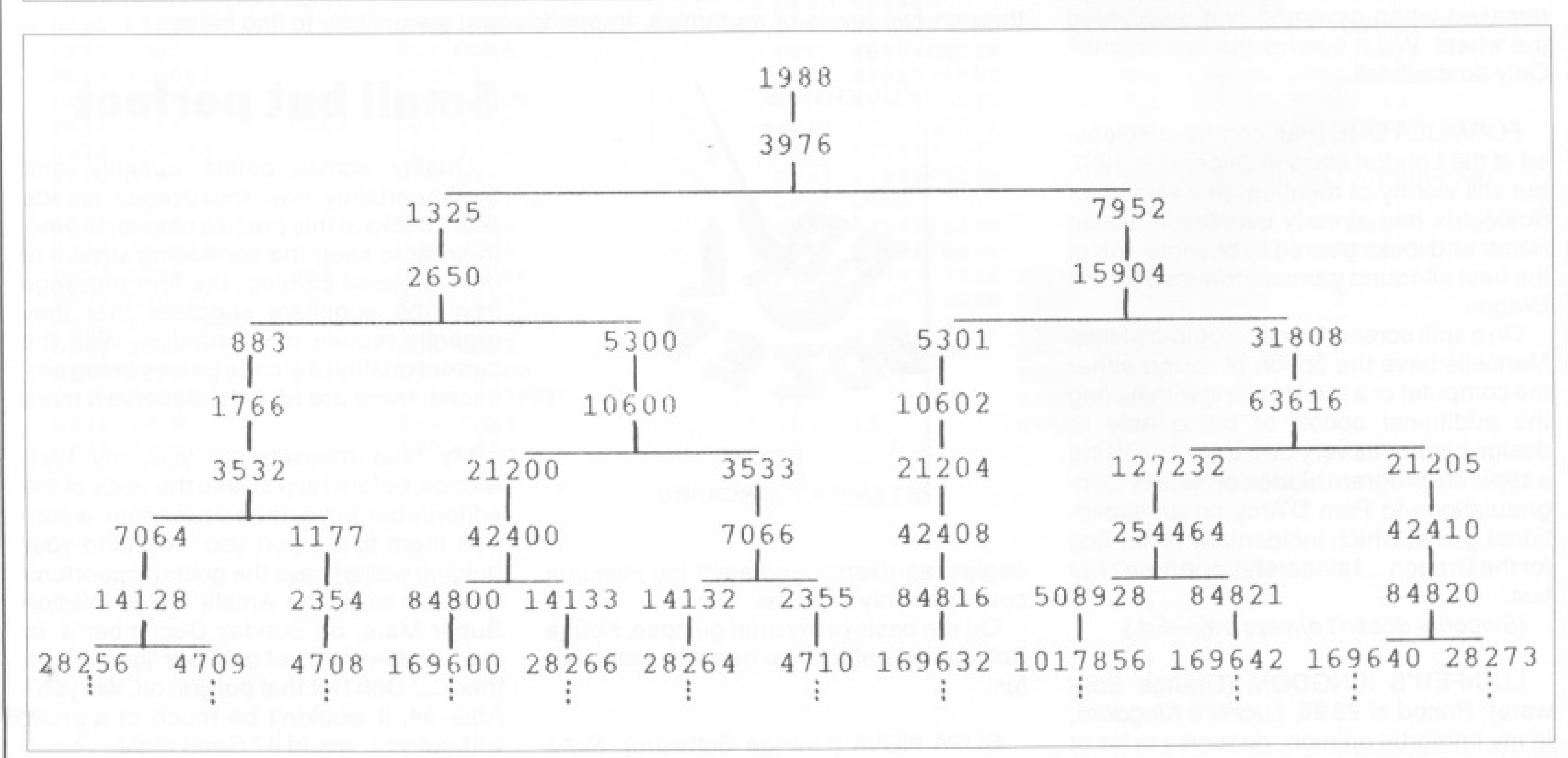
This was one occasion when the simplest method of approach proved to be the ideal method, that is, start at 1 and test each number in succession until the first is reached, which produces a maximum in excess of one million. The fact that there is no proved connection between any starting value and either its maximum or the number of steps taken to reach unity should have indicated that this was the best system.

John S Blatch of Weybridge ran an analysis on the maxima reached while the 1819 individual tests were in progress and found that the maximum 9,232 occurred most frequently; in fact, 625 times during the test. This was equivalent to a frequency of over 34%, by far in excess of its nearest rival. Why, he asks, is this? Following on from this idea, I ran a check on all starting values up to ten thousand and the 'top ten' maxima are shown here. Because of the higher range of numbers under test, the relative frequency of 9232 has fallen from the figure just quoted, but this value is still well ahead of its nearest rival. Of course, this percentage will continue to drop the higher the range of numbers that are being tested.

This is clearly because once our *starting value* has exceeded 9232, this particular maximum can never be scored again, so the frequency will never exceed the 1579 shown on the table. Whether, by continuing to run the program and test values up to many millions, another higher scoring maximum exists is a matter for conjecture. If there is such a value, it will probably be a very high number is order to allow a sufficient frequency to be scored before the values being tested again pass this maximum. Then, the whole procedure will start all over again...

If any readers have any ideas concerning the high frequency of 9232 I will pass the information on it a future article. July also had an additional puzzle. This was the decipherment of a coded message. Only two readers managed to crack it, and they were that formidable duo from Middlesbrough, D J Gray and F J Taylor. Was this a joint effort, I ask myself? Anyway, congratulations for spotting that there must have been an intermediate 'key' to the code, and in determining that this key was the words 'Dragon User'. (Yet another way in which *Dragon User* can be used to unlock the mysteries of the Universe!)

	Maximum	Frequency				
1	9232	1579	=15.79%	11	14308	47
2	39364	187	=1.97%	12	8080	44
3	250504	143	=1.43%	13	65608	40
4	95956	92	=<1.00%	14	2752	39
5	21688	87		=15	44224	37
6	4372	71		=15	80512	37
7	190996	69		17	345544	36
8	13120	67		18	41524	35
9	1276936	60		19	14560	33
10	45520	54		20	10528	32



Write: ADVENTURE

***Pete Gerrard** finds the streets of London paved with misadventure.*

SIX months ago, in the April 1988 issue of *Dragon User*, this column devoted its space to something which I termed 'interactive faction'. The idea was that people conjured up ideas for adventure games that were based on fact, rather than fiction, and subsequently turned those ideas into what would become some pretty interesting games. One or two of my local acquaintances have said that they would like to hear some more, so with the editor's kind permission ...

We'll stick to two of the main themes, mainly episodes from my college days and getting your facts right when writing an adventure game, but we'll not be bothering quite so much with science and science fiction adventures. We'll see. What we will be considering is the streets of London and various incidents that took place upon them, and if you're going to be sending an adventure to Rainbird (for example) it would be well if you got all the facts about London correct, since they are based in the place. Even if you were sending your game to a company who'd never set foot in London, someone playing it would pull you up if you got something wrong.

Alma Mater

In our imaginary adventure you are a character who, in my time at UCL(University College London, and what was that comment about the UCL old bats club last time around, Helen?!) (*You were the one who said "Tolkien has a lot to answer for" last month, me dear.*) was almost invariably known only by his surname, which was Pope. Pope was a legend at college, and if one or two of the incidents attributed to him did in fact happen to other people, that is not important. They could, and should, have happened to Pope. What is important is that we get our settings right. For instance, if an incident took place on Tottenham Court Road, involving Barclays Bank, is there really a Barclays Bank there? There are, in fact, two of them, and the one in question is at the end of Torrington Place.

It transpired one night that our intrepid hero was cycling home (Pope cycled everywhere), and was feeling somewhat wobbly owing to an over-indulgence in horizontal lubricant. Pope was in need of money, and came to a halt outside the aforementioned bank. After a little search he came up with his card and attempted to insert it in the magic money machine, but alas for him the machine wasn't working. To his befuddled mind this must have seemed like a tremendous insult, and he searched around for a brick to throw through the window. He found one, a hefty, solid sort of brick, ideal for smashing windows with. He hurled it at the bank, but made one unfortunate error. He forgot to let go. The result of this was that both brick and Pope careened through the window, and there he lay until the police arrived and hauled him away. How, as an adventurer, would you explain your way out of that one?

The second incident took place at the same spot. Here you need to know another fact or two about Tottenham Court Road. The bank is on one corner of a T-junction, and here there are two sets of traffic lights. Opposite one of them there are two telephones. Rarely working, but there they are. Again it was night time, again Pope was cycling home, and again he'd been imbibing well, if not wisely, in Chateau Colostomy. He was brought to a halt at one of



the sets of lights, and for once he didn't sail through them but decided to wait. A car pulled up alongside him, and there they waited together. And waited. And waited, until the little devil that was whispering inside Pope's brain got the better of him and he got off his bike. He leant it carefully against the lights, went over to the car, and let the air out of all its tyres. The driver was, naturally, horrified by this, but as Pope was a much bigger man he simply ran to the 'phones and called the police. By the time they arrived Pope had had a fit of remorse, and was attempting to re-inflate the tyres. The police found him lying down by the side of the car, attempting to blow them up. By mouth. Once more he was hauled away, and once more how would you get out of that situation, adventure players?

Pope of E8

Our final incident in our imaginary adventure on the streets of London, at least, the final one involving Pope, took place in Hackney, E8. Not E7 or E9, but E8. There was a party going on, it was the early hours of the morning, and the liquid had been flowing for quite some time. Pope and the owner of the flat, who shall remain nameless, decided that the one thing the flat needed to make it complete was a zebra crossing outside it, so that they could cross the busy road in safety during daylight. Needless to say, at three o'clock in the morning there wasn't much traffic about, and so they set to with one tin of black paint and one tin of white paint, one each, to paint their very own zebra crossing. Unfortunately, one of the neighbours noticed this and didn't take it in quite the charitable manner in which it was intended. They called the police, but by the time they arrived the crossing was finished and Pope and owner were safely back inside. When the knock on the door came the one thing you don't do is open it while carrying two tins of paint and saying 'It's a fair cop, guv.'

Get an A to Z

With so much scope for an adventure based on the streets of London I am surprised that there aren't more games written about it. If you're going to do one, arm yourself with an *A to Z* or some equivalent. You don't want to have Victoria station on the Northern Line of the underground, for example. You don't want Hampstead Heath south of the river Thames, or that splendid hostelry The Spaniards being nowhere near the Heath. Hackney and its marshes are in east London, not west, and if you're going to have a 39 Steps-type escapade clambering up Big Ben you might like to have little details like a flag flying from Victoria Tower when parliament is sitting, and so on.

'Underneath the arches' went the song, and the place really exists, at the back of Charing Cross station. Close by is an excellent place to start an adventure game, a pub known as The Sherlock Holmes. This is much more than just a pub, it is possibly the most well visited of all pubs during the tourist season. It is also a kind of museum to the great fictional detective, with a rather alarming hound of the Baskervilles leering down at you from the wall. Could be many an adventure item hidden in this particular building.

Minor details in adventures always help to set the scene, so if you're going to include London Zoo as part of your adventure map it might help to recall one incident there several summers ago. Two of us were strolling around the zoo, admiring the animals, and we ended up at one point next to a row of cages all full of varieties of pheasants. Nearby was a troop of Boy Scouts being led by a rather harassed looking gentleman. I was examining one of the cages, started reading the little notice in front of it that was telling me all about its

occupants, when I burst out laughing. I pointed at the sign, my friend read it, and she too was overcome with mild hysterics. The pheasant in question went by the rather unfortunate name of the Cockless Pheasant, and whoever wrote the sign must have had a sense of humour. This bird, this Cockless Pheasant, is apparently very difficult to breed in captivity! Hardly surprising really with a name like that, but we left the harassed gentleman to explain it to his scouts. We were saying nothing.

And of course, in zoos, chimpanzees always misbehave when young people are watching. I think they do it deliberately.

One last place that must be included in a London adventure is the famous Trafalgar Square. Complete with Nelson's column, the lions guarding the place, and the fountains. Overlooking it all is the imposing visage of the National Gallery, and in happier times when the place wasn't cordoned off and you didn't go there in fear of your life, New Year's Eve saw us all congregating outside the Gallery before going for a splash in the fountains to celebrate the New Year as Big Ben rang out the midnight hour. One year my cousin came down to London to join in the celebrations. He had only recently turned 18, so perhaps his over-exuberance could be explained. We had, after all, spent the night in various taverns. As midnight approached he climbed to the top of one of the fountains, and waved happily at the world as the New Year dawned. When he got back home his mother asked him if he'd enjoyed himself. He replied that he had. He hadn't had too much to drink, hoped his mother. No, answered the lad humbly, he hadn't. Then, his mother wanted to know, what were you doing on top of that ****** fountain on the news on television?! Caught out by modern technology, another trap for the adventurer in London.

Birthday card

So with a combination of facts and experience, it's not always that difficult to come up with good and original ideas for adventure games. My own troubles of today, in fact, would have made an interesting enough quest. Buying a birthday card for grandmother would seem, on the face of it, an easy mission. Not so, dear reader, not so, especially when buses are being diverted all over the place because of a road being moved, the weather decides that it will transform itself instantly from sunshine to rain, some shops have closed early because of half-day closing while others remain open, those that are selling cards are selling only those sort with rhymes so twee that it makes you cringe even to look at them. To say nothing of knowing that one cannot leave the house before the post has arrived in case the hellhound next door decides to add to its collection of postmen buried in the back garden by pinching another one (and his post) from under my very nose. Douglas Adams (*Hitchikers' Guide to the Galaxy* man) has co-produced a very successful adventure called Bureaucracy, based on the problems of dealing with such things as banks and airports. They are as naught compared to the problems of coping with objects like postmen, dogs, buses, and birthday cards.

Well, I hope that gives you a few ideas for adventures. Enough of ideas, though, we've neglected programming long enough, so back to that next time around. Meanwhile, all this writing about beer and events of long ago, I'm going to the pub!



COMING up in November of this year (exact date next month) is an interesting event for adventurers everywhere. It's an annual bash, and this is a sideways look at some of the happenings from last year.

The Adventurers' Convention was held at the Europa Gallery, part of Sutton Library, on the 28th November 1987. It was apparently the second such convention, although I never heard anything about the first. At it we were promised such treats as talks on multi-user adventures, adventure creator programs and what the future holds for adventure games, as well as demonstrations of various popular games throughout the day. What did we get? Read on ...

Sutton bound

You know me, always game for a laugh, so when Sandra Sharkey (then of the fanzines *Adventure Probe* and *Soothsayer* fame but now moved on to great things in the adventure world) asked me if I was trundling down to Sutton for the convention I replied "of course". The original plan was for us to travel down separately on Friday and then meet up on the Saturday somewhere near the Europa Gallery.



However, events were such that we ended up travelling down together, so, devious to the last, I arranged a meeting with someone without telling Sandra anything about it. The train journey was cold but otherwise uneventful, as ever I was aghast at the price British Rail charge for cans of McEwans Export, we planned out several adventures, and were only half an hour late getting into London Euston. I forget British Rail's excuse, dead wallaby on the line at Crewe, or some such nonsense.

On the pretext of showing Sandra my old university followed by the possibility of meeting some of my former colleagues if we went into a particular pub, we arrived at the Jeremy Bentham at about ten past two. A nod to a friend, I asked him and Sandra what they wanted to drink, and then said to Sandra "I thought you might like to meet my brother". Yes, Mike Gerrard, adventure reviewer extraordinaire, lurking behind several pints of lager. An interesting chat about the world of adventures occupied our moot for the next hour or so, then Mike had to be off and Sandra had to be deposited on a train to Sutton to meet her sister, with whom she would be staying the night.

No problem, you might think. Hang on, this is an adventurers' convention we're

going to, and life is never that easy. Sandra was, understandably enough in the wake of the terrible fire at King's Cross, unwilling to travel on the underground, and since it is many years since I sat on a bus in London I decided to do the tourist bit and walk to Victoria. It's not that far, really ... (*I made that mistake once, only in the reverse direction. Saved 40p in tube fairs and had to spend £4 getting my shoes re-soled.*)

Hours later the lantern was going dim, the food was running out and the water had all but vanished, so we cast the frotz spell on Sandra's carrier bag and proceeded to admire Buckingham Palace by spell-light. Unfortunately we didn't have a featureless white cube to blorple ourselves to the station, so we had to endure the most incredible swarm of starlings around the Mall before actually reaching the Palace. Was Lady Di there? Couldn't see her. There was a guardsman, but as he wasn't wearing a red uniform Sandra cursed him loudly and we hurried on.

Eventually Sandra was deposited on the correct train to Sutton and I was free. I will skate over the events of Friday night for fear of alarming those of a nervous disposition.

Saturday morning dawned bright and early, and after reading some advance news of Beyond Zork in the wonderful Infocom newsletter The Status Line, to which all must send off for immediately, Dimli Gloing (the real one! My host for the weekend, John Ryan) and I decided that we wanted a 'wand of annihilation'. Cast the wand of annihilation at the discipline crab was an example input given, I must have one. If we did, we might have found it slightly easier to park in Sutton, but as it was we had to leave our chariot down a side street on a yellow line and hope and pray that nothing would happen to it.

After that bad start (we did find an NCP place that had space for 3,000 cars, but as we only had one we ignored it) life didn't get any better when we tried to find the Europa Gallery. Eventually we flagged down two policemen and things got rapidly worse when Dimli started off with "excuse me chaps, can you ... oh, sorry madam" as a policewoman in trousers went red and glared at him. Her friend seemed most amused, and directed us to where we wanted to be. Outside the gallery was a Sandra Sharkey, bearing the bag of gifts, and after a hasty cigarette we went into the convention. At last!

Civic scenario

It was taking place in Sutton Civic Centre, which houses a wonderful library and many other offices and doors and lifts, plenty of scope in which to lose ourselves. We did, of course, but finally got to the start of the convention proper.

Since Sandra had already been in for a quick look round she just marched straight past the reception desk. I, bearing my Adventure Probe free ticket, was duly registered and walked in after Sandra. Dimli tried to follow me but was pulled back by the chap on the desk. "Damn!" he exclaimed, "my cloak of invisibility's worn off, must get another one", and when he signed himself in as Dimli Gloing and tried to pay two Zorkmids for his entrance money he left behind one very confused receptionist and joined me and Sandra.

Downstairs there was not a lot going on, so we decided to travel to the upstairs part of the convention. Two lifts, an orange one and a green one, to choose from. A crucial decision, but we got into the orange one, pressed the up button, and after a moment's hesitation we were off.

Upstairs, and an engaging chat with Mike Austin, one of the many Austins responsible for Level 9. On an Atari 1040,



which amazingly managed not to disappear into Sandra's carrier bag, he was running the then latest Level 9 adventure epic, Gnome Ranger. Wonderful stuff. It's worth buying it just to read the book that accompanies the game, a diary belonging to the hero Ingrid. Such characters as Arback and Isfront (not sure about the spelling there) Garden, and grandma. In the game, wherever an 'n' can appear at the start of a word it is prefixed with a 'g'. Thus you can move gnorth, gnorth east, the prompt for the first few moves is 'what gnext', or 'what gnow' I suppose, but grandma takes this to extremes, at one point calling someone a gnigngnie. The graphics on the 1040 were truly wonderful, and Dimli bought a copy there and then.

We heard a lot about graphics in adventures, and it seems that many people only put them in because the distributors will not take on a game that doesn't have them. Some people rave about them of course, the very same people who rave about MUD and Shades, two multi-user over the 'phone games, but do they have graphics? They do not, so I think we ought to start a campaign for MUGs to have graphics. After all, if a humble Dragon can have them, surely something with the power of a DEC-10 or whatever is capable of having them and displaying superb pictures? Takes tongue out of cheek and carries on ...

We went on to another Atari and annoyed Magnetic Scrolls' people by immediately turning the graphics off on *The Pawn* and started to solve it from scratch. After expressing our own annoyance at the many inconsistencies in the game, and how it ever won a game of the year award is beyond me, we went elsewhere.

Actually, we went to a pub, but we'll ignore that diversion and get back to the convention.

Along with Jim O'Keefe, an adventure reviewer we chanced upon on one of our innumerable visits to the coffee bar, we went to the last talk of the day (slight confusion over the other two owing to pub opening hours), a discussion on the future of adventure games with Peter Killworth as the main speaker. Main? Ha, only speaker. The man would brook no interruptions and discussions of interesting topics, and from the way he put his opinions across it seemed that no-one else in the world knew how to write adventure games except him. I believe I saw an Austin shaking his head sadly at one point, and as Killworth droned on and on more than ever did I want my wand of annihilation. Failing that, I just got up and walked out with Sandra, and Dimli joined us moments later in another retreat to the coffee bar. There we met Sandra's sister carrying oodles of stuff belonging to Sandra, and that was really the end of the day's entertainment.

Horizontally mobile

Being a kindly fellow Dimli gave Sandra a lift back to Euston Station, and we made sure that she got on the right train at the right time. Not one of life's great travellers, our Sandra, as she would be the first to admit. A minor panic at seeing several hundred policemen and police dogs on the station escorting a horde of football fans somewhere, but wherever they were going they were not going on to the adventure train and Sandra could go safely home to sunny Wigan.

I stayed on an extra day, principally because I wanted a drink at Sunday lunchtime in Hampstead. It was so misty we nearly missed the pub, but we got there in the end. What a collection of customers! I love it, do people like this really exist? They do, thousands of them, and they can stay there. Upwardly mobiles everywhere, and by the time we left the pub we were mobile as well, but sadly not very upward. A distinct incline to the horizontal, I fear.

And the convention? A good idea that no-one seemed to know what to do with, was the overall opinion of Dimli and I. More publicity would have helped, invitations to leading adventure journalists and magazines that favour adventures, and certainly more advance warning about it all. But they did their best, and one or two of the exhibitors could have tried harder and made things even better. Level 9 reigned supreme, and words of praise once again for Mike Austin for indulging us in our, at times, somewhat bizarre conversations.

This year will, I'm sure, be bigger and better, and good luck to them. I'll probably be there, and perhaps I might see one or two of you as well. Not too much that's specifically Dragon, but interesting for all adventurers nevertheless. And that's that! Bye for this month.

How many monkeys in a coconut?

Gordon Lee has a loverly bunch of puzzles

FROM time to time on this page we present an assortment of miscellaneous problems which can be solved by a computer approach. This month, here is a selection which have been sent in by readers, and which other Dragon users will, no doubt, find good practice in programming.

First, from Paul Weedon of Wotton-under-Edge comes a familiar alphamatic:

```
 CROSS
 ROADS
DANGER
```

This is an addition sum in which the digits 1 to 9 have to be substituted for the letters different letters represent different digits. Zero is not used. Although the puzzle itself dates from pre-computer times, Paul suggests a programming approach especially as the letters include those in the word 'Dragon'!

Mention of this 'Dragon' connection reminds me of an alphamatic problem which was one of our competition questions a couple of years ago, and which more recent readers may like to tackle:

$$\frac{\text{DRAGON}}{\text{USER}} = {**}$$

In this alphamatic, the result of the division is a two-digit number in which the two digits may, or may not, be alike. If this value is *cubed* and the digits of this cube replaced by the appropriate letters from 'DRAGON/USER', the result is a familiar English word.

Another problem which can be readily solved by computer is the puzzle of the 'Monkey and the Coconuts'. This has been suggested by David Ingrams of Northampton.

Five castaways are marooned on a desert island. They had collected some coconuts which they agreed to share the following morning. During the night, the first man awoke and, fearing that he may be cheated out of his share of the coconuts, decided to claim his share while the other men were still asleep. Dividing the pile of nuts into five equal piles, he found that he had one coconut left over, so he gave this to the monkey. Hiding his share, he piled the remaining four piles together and went back to sleep. Each of the other four men woke in turn and decided on the same course of action. Each time there was one nut remaining from the division, which was given to the monkey. The following day they all awoke and were able to divide the remaining coconuts exactly between them. Can you say what is the smallest number of coconuts that must have been present at the start? An additional problem asks for the initial number if, when making the final division the following morning, there was one coconut left over which was given to the monkey, of course!

The subject of perfect squares was of interest to a couple of readers. A. Radford of Norwich writes that there are just four eight-digit perfect squares in which the first three digits are the same as the last three digits and are in the same order. Can you find them?

Eight-digit squares are also of interest to Tom Denton of South Norwood who asks:

1) Find any eight-digit squares in which the number formed by the first four digits is juat one more than the number formed from the last four. For example, 68476846 except that here this number is *not* a perfect square.

2) Repeat the above, except that this time the first four digits should be one *less* than the last four.

Finally, here is another problem from Paul Weedon, this time relating to the digits 1 to 9 in the order that they appear on a pocket calculator:

789
456
123

The problem requires you to find sets of four prime numbers, as follows: First, select three different digits so as to make a three-digit number say 1, 2, and 9 to make 129. Note the pattern formed on the keypad by the positions of these keys, and then rotate this pattern three times 90 degrees each time and note the three three-digit numbers indicated at each turn. In the method currently in operation).

Prize

WHEN you have found your prime number in a set of four, you may be able to choose a prime program from a set of two.

This month, **Pulser Software** are sending us a packet from Oldham, containing five copies of **Utopia** and five copies of **Spy against Spy**, which will be allocated to the lucky winners.

Like Gordon Lee's teasers, **Utopia** is said to be prime but tricky; for those who prefer a more mild-mannered mystery, **Spy against Spy** offers fun fairly free of fearful frustration.

Express your preference; you may be lucky.

And if not, well, there's another Lee cortex-buster next month.

Rules

Please place all four of your digits in an envelope (fingers out) inscribed NOVEMBER COMPETITION, along with your listing (no tapes, thank you. CDs are acceptable) and any footnotes you wish to include, and deliver by hand (or any other method currently in operation).

For this month's tiebreaker, I would like suggestions for the best way to get Dragon User copy to the right place on time in the event of a total postal services strike. This should not involve handing the copy to a member of the advertising staff (fortunately, Dragon User has no advertising staff) at the PCW Show. The best suggestions will be forwarded to ********* ... (no, I don't really want to lose advertisers and contributors).

August winners

THE August competitors seem to have squeezed home before the strike. Owing to circumstances that we won't pry into, the answer to the problem as printed did not work out to the nice round sum originally intended, so we have allowed a range of calculations falling (as it happens) roughly between 20472 inches and 20487 inches.

There were quite a few beautiful programs giving quite wrong answers, as is to be expected in a puzzle of this type. The eventual recipients of a **Hotel On Mayfair** from **Preston Software**, when it has beaten its way across the marches from St. Brides Major, will be:

Anthony M. Clarke of Wirral, E A Newman of Addlestone, D R Marsden of Garston, Dave Lardner of Rutherglen, Terry Potter of Chiseldon, Denis O'Mulloy of Comberton, Brian Hughes of Hounslow, George H. Fletcher of Hall Green (who may recognise parts of the picture on page 4), Roy Cashmore of Market Harborough and Fred Willers of Yarnfield, who gets a special mention for rendering his answer into furlongs.

'appen another time we'll remember to tell you what units we'd like! My calculator finger's all wore out.

This is the first time we've had several poems without actually asking, and very good they were too. The rest were evenly split between grovelly invitations and realising the assets, so we liked loser Don Robertson's view: "If I had a Hotel on Mayfair, I would have lots of washing up to do every day."

Solution

See opposite.

case given the set of numbers would therefore be 129, 367, 981 and 743. The solutions we are after and there are *three* in all must all be comprised of prime numbers. So, in the example just given, as 129 and 981 are not prime this set would be rejected.

As a supplimentary to this problem, Paul also asks if readers can say what, apart from all being prime, each set has in common with other sets. The solution to this, and all the other problems, will appear in a future issue.

The competition this month is an extension of this last problem. Instead of starting with a *three*-digit sequence of keys on the keypad, choose *four* digits. Thus, by rotating the pattern so formed four *four*-digit numbers will be generated. As before, these four numbers must all be prime. Paul has found just one set, and it is this answer that is required to win one of this month's prizes.

The Answer

This is Gordon Lee's own solution to the August competition
see page 26 for results

ANSWER: The total length of the spiral would be in the region of 568.75 yards.

SOLUTION: The calculation is performed by assuming that the record is made up of a series of concentric circular grooves rather than the true single spiral. Suppose that it was possible to cut and deform a gramophone record in the following way: First, a cut is made along a radius from the centre to the outer edge. Now each groove on one side of the cut edge is moved to adjoin the next groove along on the other side of the cut. This movement would have practically no effect on the length of each of the coils of the groove, but would result in a series of 'almost' concentric circles each differing from its neighbour by a groove's width. Because the amount of lateral movement in relation to the circle's diameter is so small, each spiral segment would be virtually indistinguishable from a circle of the same diameter.

```
10 D=0:REM PI=3.1415926
20 FOR R=2.75 TO 5.75 STEP 0.00391304
30 C=2*PI*R
40 D=D+C
50 NEXT
60 PRINT"Total distance (in yards)":PRINT D/36
```

The program listing carries out this computation. Radially from the centre of the disc there is a central portion of radius 2.75 inches and an outer ring of .25inch. Thus, the actual groove area occupies a radial distance of 3 inches. As the record rotates 33.333 times a minute, and plays for 23 minutes, there will be a 766.666 revolutions from start to finish, and therefore this many grooves across the 3 inch radial distance. Each groove has a width, therefore, of 0.00391394 inches. The program computes the sum of a series of circumferences of circles with radii from 2.75 to 5.75, each with a radius increasing by 0.00391304 inches at each step. The total obtained is divided by 36 to get an answer in yards.

Communication

Problem: Urgently wanted: DeltaDOS and manual and cable for desperate Dragon owner.
Name: Keith.
Address: Tel: (021) 525 6018.

Problem: Wanted, Pascal compiler, word processor (preferably cartridge based), *Lunar Rover Control* and *Cuthbert in the Jungle*, tape versions.
Name: George Bathurst
Address: Tel: 0242 578277 (Cheltenham).

Problem: Does anybody have a Dragon's Claw interface and snap camera they want to part with?
Name: T. Glickman.
Address: 15 Epping Drive, Sale, Cheshire M33 5LR.

Communications

Write down your problem on the coupon below (make it as brief and legible as possible) together with your name and address and send it to Communication, 49 Alexandra Road, Hounslow, Middx TW3 4HP.

Problem ....
....
....
....
Name ....
Address ....
....
....

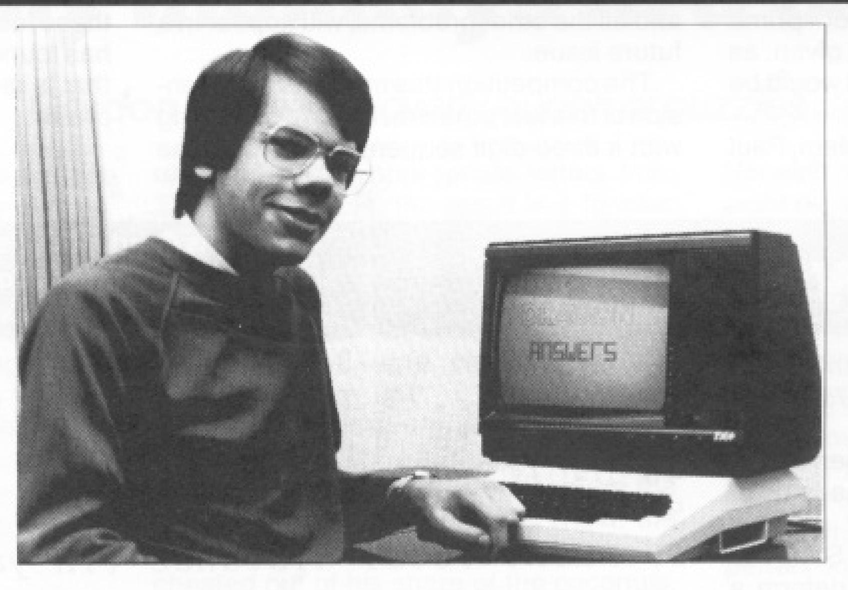
Adventure Contact

To help puzzled adventurers further, we are instituting an Adventure Helpline — simply fill in the coupon below, stating the name of the adventure, your problem and your name and address, and send it to Dragon User Adventure Helpine, 49 Alexandra Road, Hounslow, Middx TW3 4HP. As soon as enough entries have arrived, we will start printing them in the magazine.

Don't worry — you'll still have Adventure Trial to write to as well!

Adventure ....
Problem ....
....
Name ....
Address ....
....

If you've got a technical question write to Brian Cadge. Please do not send a SAE as Brian cannot guarantee to answer individual inquiries.



Constant Quattro

I have a Dragon 64 and terminal software which I would like to use with a 'Quattro' modem that I have acquired, unfortunately without a manual. This set-up works fine for bulletin boards running at 1200 baud, but when I try to access 1200/75 boards the Dragon can only receive. How can I set up the RS232 port on my 64 to run at 1200/75 baud?

THE Dragon's serial port cannot operate at split baud rates. However, the Quattro (which is Hayes compatible) has a function known as 'constant speed interface' which allows the modem to operate at any line speed (including splits) regardless of the baud rate between modem and Dragon (ie at a constant speed).

This can be enabled by sending the modem the following command sequence:

+ + + AT&I1 (for non-split speeds)
+ + + AT&I3 (for 1200/75 or 75/1200)

If you get in a mess, you can always reset the modem to the factory default settings using:

+ + + AT&F

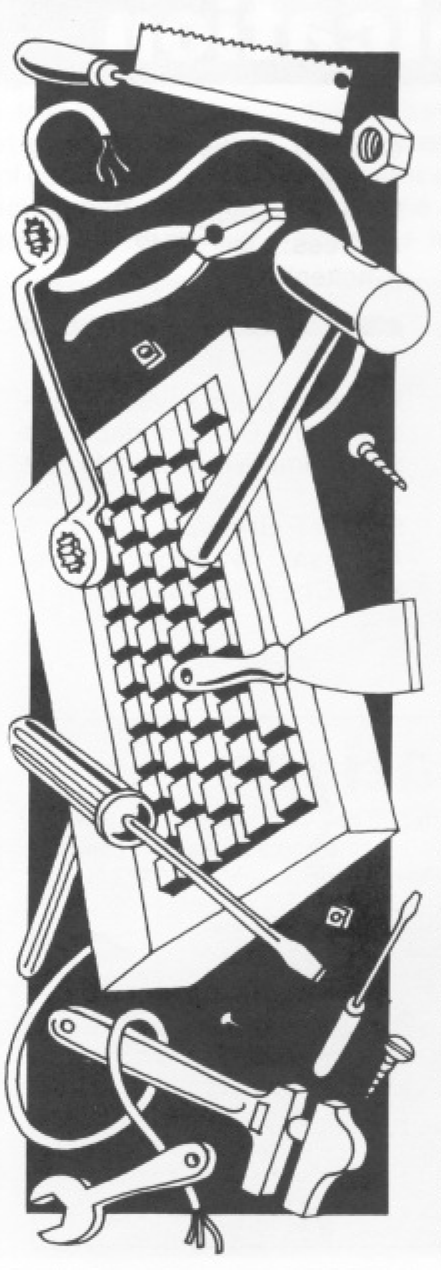
Execute a routine

SOME years ago, I saw a listing which gave an EXEC command for SCREEN 0,1 on the TEXT page. I can get the effect by storing 180 in &HFF21 and 14 in &HFF22, but the lack of the knowledge of the EXEC command irritates me. Can you oblige please?

R Davis
39 Boxley Drive
West Bridgeford
Notts.

YOU'LL actually need to call two ROM routines, firstly 43322 (38316 on the CoCo) resets the default text screen position and display, then 43536 (38530 on the CoCo) with the screen colour set parameter (0 or 1) in the 'B' register, ie

```
JSR 43322
LDB × 1
JSR 43536
```



Script a page

A friend of mine has told me about a language called *Postscript*. Apparently, this can be used to create fancy graphic displays easily and with any graphics screen. Can you tell me if this language is available for the Dragon and if so from where I can obtain it and at what price?

Adrian Orbit
Three Mills
London

Postscript is a 'page definition language' developed by a company called Adobe, which is used mainly in laser printers. The advantage of using this language withint an 'intelligent' printer is that the same 'program' can be used with any output device (laser printer, screen, typesetter etc.) that understands Postscript to produce the image to the best ability of that device.

Postscript is similar in structure to Forth and is quite readable. For example, to output the words 'Dragon User' in 2 inch high characters at the bottom of a page the postscript code would read:

```
/Helvetica findfont (36 0 0 144 0 0)
makefont setfont
0 0 moveto
(Dragon User) show
showpage
```

I don't know of any implementations of Postscript for any home computers, but a Dragon 64 could be connected to a laser printer (such as an Apple Laserwriter) which has the language built in, via the serial port.

Stocks for discs

I have a Dragon 32 and would like to get a disc drive to go with it. My father says he will buy me one if I can find a program which will look after his shares on the stock exchange. Can you tell me if there are any shares programs for the Dragon and if so where can I get one from?

Tony Marcher
Cardiff

The best 'stocks and shares' program I have seen is *Sharebox*, so here is a brief description for your Pa...

Each share record is identified by a 'short name' of up to eight characters, which are used to sort and retrieve the records. For example, 'UtdNews' could be used as a short name for 'United News'. Within the share record are fields for full name, security code, group number, divident months (up to 4) estimated yield percentage, purchase price, current price, number of shares held, capital gains, tax credits and dividends. Once all the initial data has been entered, it is a simple matter of keeping the files up to date with share prices for the current period, and any buying or selling you do.

Some of the different reports provided for are 'list share valuation', which produces a report on the valuation of shares, 'list capital gains', which shows all share records which contain capital gains or losses (ie during the current year); 'list dividends received', which shows all the dividends and tax credits received to date in the current year and calculates the yield percentage (the dividends as a percentage of the holding at the current price).

The 'list income forecast' report will show all the shares which are expected to pay dividends within the range of months selected, and will estimate the dividend received. Another final report allows a graph to be drawn of the price changes of particular shares over the twelve periods. This gives a visual indication of their performance.

Sharebox costs £16.99 and is available from Bob Harris (who is a nice man), at Harris Micro Software, 49 Alexandra Road, Hounslow, Middx.